NAVAL AVIATION NEWS

42nd Year of Publication

AUGUST 1961

NavWeps No. 00-75R-3

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IN THE FRONT LINE AND READY

I don't see any weapons, or weapons complex, that displaces the carrier-amphibious combination for furnishing ready response to creeping aggression. It has been our tradition, and it will be our business as long as it fits the nation's needs. Our aim in the Navy—and in Naval Aviation—is to meet the threat wherever and whenever it occurs, with the precisely proper response precisely applied.—VAdm. R. B. Pirie, USN, Deputy Chief of Naval Operations (Air

NAVAL AVIATION NEWS

FORTY-SECOND YEAR OF PUBLICATION, AUGUST 1961

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Issuance of the publication was approved by the Secretary of the Navy on 3 April 1961

■ COVER

Martin Company's talented artist, Roy Grinnell, did this month's front cover as a companion piece to the Bullpup feature starting on p. 14. Above, a formation of VA-72 Blue Hawks from USS Independence engage in ORI in the Mediterrean near Sardinia, Italy.

Published monthly by Chief of Naval Operations and Bureau of Naval Weapons to disseminate safety, training, maintenance, and technical data. Send mail to Naval Aviation News, Op 05A5, Navy Department, Washington 25, D. C. Office is located at 2306 Munitions Bldg. Telephone: Oxford 62252 or 62259. Annual subscription rate is $2.50 check or money order ($1.00 additional for foreign mailing) made payable to Superintendent of Documents, Government Printing Office, Washington 25, D. C. Single copy, $.25.

NAVAL AVIATION NEWS

Adm. Anderson New CNO

Steps up from 6th Fleet Command

President Kennedy has named Adm. George W. Anderson, Jr., Chief of Naval Operations, effective 1 August.

A Naval Aviator, Adm. Anderson succeeds Adm. Arleigh A. Burke.

Noted as a military strategist and planner, Adm. Anderson was senior U. S. Officer in NATO Plans and Operations ten years ago under Gen. Eisenhower and was Special Assistant to the Chairman of the Joint Chiefs of Staff.

Adm. Anderson has commanded the aircraft carriers, *Franklin D. Roosevelt* and *Mindoro*, and the Formosa Patrol Force.

He was Chief of Staff, Joint Staff, Commander in Chief Pacific, July 1956 until May 1957 when he reported in the rank of Vice Admiral as Chief of Staff and Aide to the Commander in Chief, Pacific.

He was ComCarDiv Six from July 1958 at the time of the Lebanon crisis until September 1959, when he became Comander Sixth Fleet and Commander Naval Striking and Support Forces, Southern Europe.

CNO, ADMIRAL GEORGE W. ANDERSON, USN

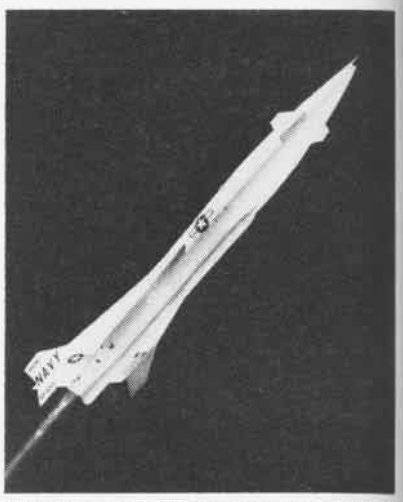
Another new appointment is that of VAdm. Claude V. Ricketts, Commander Second Fleet, and Commander Striking Fleet Atlantic, as Vice Chief of Naval Operations, as of 1 August

KD2B Soon to be Employed

Target is Supersonic, Expendable

The Navy's Supersonic Fleet missile training target will be operational by October 1962.

The KD2B is the result of a joint Navy-Air Force research and development effort aimed at finding a target with a speed and altitude performance to match the capabilities of the latest aircraft. It is specifically designed for air-to-air and surface-to-air missile training and simulates the speed, altitude and radar appearance of aircraft.



MISSILE TARGET PROVIDES NEW REALISM

BuWeps manages the program while Beech Aircraft Corporation, Wichita, Kans., is the contractor. One of the targets has already been successfully launched at the Naval Missile Center, Point Mugu.

When the target becomes operational, it will have a hit or miss scoring system, a self-destruct system, and operate in all climatic environments. One of its features is a self-contained guidance system which permits the

'FORD' FLOWN *by VF-162 from attack carrier, USS Intrepid, shows the wing tank-mounted refueling probe now in operational service. This installation, developed by VF-162's predecessor in CVG-6, VF-74 (NANews, May 1961, p. 25), was put into production at OSR, Jax.*

target to seek its pre-set altitudes and speeds for fighter pilot training problems.

KD2B is capable of level flight at altitudes ranging from 5000 to 70,000 feet at twice the speed of sound.

MATS Commends VR-22

Wins 3rd Consecutive Safety Title

Naval Air Transport Squadron 22 has been awarded its third consecutive Military Air Transport Service Flying Safety honor, given annually. It will be added to the others won by VR-22 since its assignment to MATS in July 1958.

In a letter of congratulation, MGen. W. P. Fisher, USAF, Eastern Transport Air Force Commander, praised the "high degree of safety consciousness" shown by the unit, and the "invaluable contribution to the over-all MATS safety record."

A unit of the Atlantic Transport Wing, VR-22 flies Air Force 4-engine DC-6 *Liftmasters*, from NAS NORFOLK in support of MATS' airlift mission.

Fuel is Pumped Two Ways

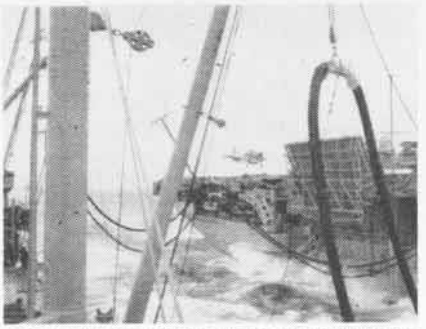
Air Operations Continue as Usual

Simultaneous two-way transfer of fuel was made between the carrier USS *Bennington* and the fleet oiler USS *Passumpsic* as the two ships steamed homeward from Far East deployment.

Meantime, aircraft operations aboard the carrier continued as usual.

Bennington pumped JP-5 to the tanker through one hose while receiving standard fuel from the tanker.

Both skippers are Naval Aviators.



AD5W GUPPY LANDS DURING FUEL TRANSFER

'Champ' Lands Two DD's

Carrier-Controlled Approach Made

USS *Lake Champlain* successfully "landed" two destroyers in the North Atlantic with the aid of the electronic radar system used exclusively for carrier-controlled approach of aircraft.

Steaming in dense fog, *Lake Champlain* employed "airdale" skills and shipboard precision navigation to bring the destroyer USS *Eaton* alongside for an emergency medical transfer by high-line and to bring the USS *Bache* into lifeguard station behind the carrier.

Visibility had been cut to 50 yards in evening fog, making a routine approach unusually hazardous. Use of radar added to the drama.

Capt. Ralph Weymouth, commanding the "Champ," passed precise maneuvering recommendations from the bridge to CCA where Cdr. Harry W. Peterson, Carrier Air Traffic Control Officer, got word out to the two incoming destroyers. Constant voice communications were maintained with *Eaton* and *Bache* via the ship's "land/launch" radio frequency.

In less than an hour, *Lake Champlain* was able to make the unique log entry that two destroyers were safely guided alongside via the ship's carrier-controlled approach gear.

Milestone Marked in Metals

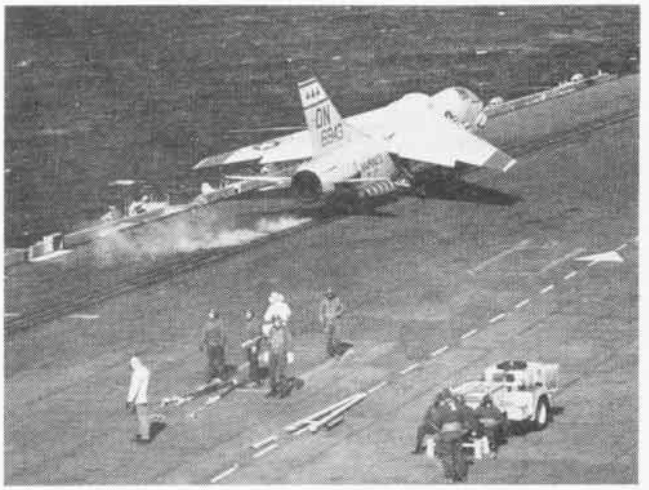
High Purity Berrylium Developed

A major metallurgical advance has been made with the development of a process for the production of high-purity berrylium for the Bureau of Naval Weapons.

Franklin Institute Laboratories, Philadelphia, made studies in BUWEPS which show that berrylium is not inherently brittle. Tests revealed that impurities remaining in berrylium refined by other processes were responsible for the brittleness.

The Institute has produced single crystals of berrylium with a ductility some 50 times greater than that of earlier berrylium.

Berrylium may become an important structural material for applications requiring high strength and light weight because of valuable properties; it is 34% lighter than aluminum; has three times the elasticity of titanium, and one and a half times that of steel. Its high strength and high melting point (2340°) should permit design to service temperatures up to 1100° F.



EARS HAD IT *in the old days and the best defense against deafening decibels distributed by F7U Cutlass at left seemed to be a dive for the deck. Startling contrast in conditions ten years later is shown as F8U with markedly higher sound level output is launched. Flight deck crew wearing FDH-1 helmets takes shot in stride, is visibly unaffected by tortured tail tones of Crusader. Helmet, developed by Airborne Equipment Division of BuWeps, is standard item on carriers and has helped make flight deck chores in the jet age soundly routine.*

GRAMPAW PETTIBONE

SCUBA Anyone?

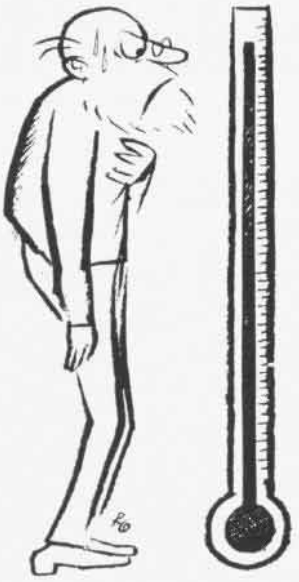
An F3H-2 pilot had just made a normal day mirror approach to an arrestment aboard a CVA. The hook had picked up No. 1 wire, and after positive arrestment, the pilot had retarded the power and raised the hook. As the *Demon* started to roll back, he advanced throttle to the military power position. Just as the engine started to accelerate the FLY Three Director gave him a "come ahead," indicating the wire had dropped free of the hook.

As the F3H started to move forward angling slightly to the left, the pilot applied right brake in order to turn to starboard in the direction of the foul line and the starboard catapult. The right brake pedal bottomed out —NO BRAKE! He pumped the pedal rapidly several times, attempting to build up pressure, retarded the power to idle and then cut the engine as the *Demon* continued to roll slowly toward the port catwalk!

No one was able to get to him with chocks in time, and the F3H went over the side just forward of the mirror at about a 70° angle to the catwalk. The aircraft entered the water nose down and slightly past the vertical position, continuing over on its back.

The pilot opened the canopy just before the *Demon* hit the water and held his position, securely strapped in, during the first five or six seconds of rushing white water and severe turbulence. He was on 100% oxygen and having no difficulty with breathing underwater. He released the two shoulder rocket fittings of his integrated harness and by much twisting and pulling, for he was hanging inverted in the cockpit, managed to release first one and then the other of the lower rocket fittings.

Disconnecting his oxygen hose, he pushed himself downward and was about two-thirds out of the cockpit when he found himself still secured by the leg restraint cord of the Martin-Baker seat! He was unsuccessful in



his efforts to return to the cockpit to actuate the ditching handle or leg restraint lever, so he pulled out his survival knife from its sheath on the chest strap of his integrated harness. He then held the leg restraint cord taut with his left hand and after 8 to 10 sawing motions with the knife managed to cut the strong cord.

He was about ready to explode, for

he'd held his breath for what seemed an eternity and now hastily pulled the CO_2 bottles of his Mk-3C Mae West. Fortunately, the F3H was still floating, and he shot to the surface immediately, completely breathless, to discover that blessed helo already moving into position over the wreck! Two minutes later he was safely back on the flight deck. His injuries? A small cut on the left thumb from checking for the sharp edge of his knife before cutting himself free.

Grampaw Pettibone says:

Great horned toadies! Some would say he's lucky but this man made his own luck! With over 2400 jet hours and 297 jet CV landings he's a real pro. Now he holds the record for breath-holdin'.

Ol' Gramps has no bones to pick with the use of power to provide braking action during roll back and then to move forward against 38-40 knots of wind over the deck. However, we've lost three over the side this year and overhauled two A3D's after brake failures, so maybe a slight slow-down for a brake check before the "come ahead" is in order as an SOP.

Distracted

An experienced F3H *Demon* pilot gave his flight of six a thorough briefing aboard a CVA one evening. He covered both the details of the night CAP hop for which they were scheduled and the flight to an airfield ashore at which their hop would terminate. He emphasized the peculiarities of the airfield traffic pattern, positive avoidance of any flight over naval housing areas within the traffic pattern and cautioned everyone to "look sharp and be safe." He mentioned the reports of violations incurred by other squadrons on flights to the beach in this area.

The CAP hop was completed, and the flight bingoed to the beach at 2130. They orbited once over the field and came around for the break in sections. The leader was doing 280 knots, a little fast, but broke on the numbers over runway 4. It was either a break

ILLUSTRATED BY Gibson

now or carry it all the way to the end and take it around wide to clear the housing area.

As he broke, he concentrated on passing between two lighted areas he had noted on the ground. Checking his airspeed indicator he saw 220 knots, so he selected slats and flaps and continued the approach. At the 180 he was wide but clear of lighted areas. After a quick eyeball check of slats, flaps, and the gear indicators, he reported "down and locked" and concentrated on a smooth approach and touchdown.

He was right on proper power and attitude on final, but as he passed over the end of the runway, he was showing about ¼ unit fast on the angle of attack indicator. He adjusted the aircraft attitude and made what felt like a very smooth landing on a slightly rough runway—wheels UP! Shutting the engine down immediately, he hit the gear handle in anger, and it went to the down position. The wheels popped out slightly and the F3H slid to a stop. Damage incurred was minor, for the partially extended wheels saved the belly from the usual scrape.

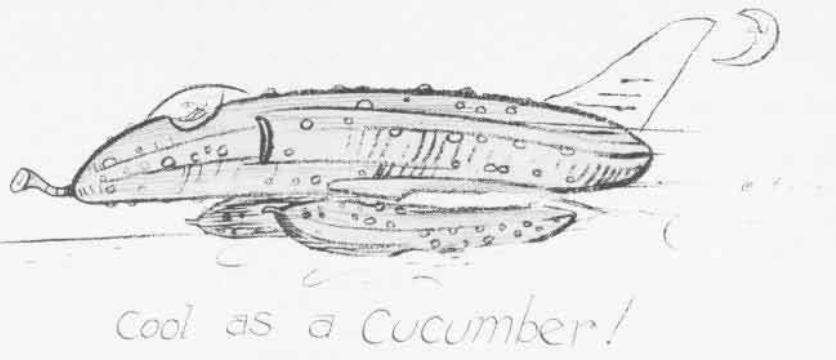
Grampaw Pettibone says:

Phooey! There's no d-n excuse on earth for forgettin' the wheels, and this man was the first to admit it, but there's also no reason for handin' a pilot so many distractions and rules to follow at a NAVAL AIR STATION that such an accident is a dead set-up!

I've poured over this airfield's OPS manual and can find no reference at all to avoiding the housing areas in the traffic pattern. The long and short breaks are clearly indicated however, so the restriction is evidently in effect. A 360° overhead break dropping off 1000 feet to a landing is NOT recommended procedure for our PRESENT DAY jets. It can be done, but gets hairy more times than not. Jet noise is disturbing, but there can be NO COMPROMISE with aviation safety to save ruffled nerves on the ground! Not inside the government fenced area, that's for sure!

Night Incident

An A4D pilot entered the DOG pattern around a big CVA after returning from a bingo to the beach for refueling. This was his second attempt at night carqual. He's had a little trouble the first period with a total of three bolters and no arrestments in seven passes, but the LSO had advised him his problem was holding high and fast on all passes, not dangerous.



Cool as a Cucumber!

The pilot felt pretty good about the night carquals, so far, a little keyed up, but who isn't? The moon was up, nice and bright, and there was a good horizon. A man couldn't ask for a more favorable night.

He was given a Charlie and entered the landing pattern. The first pass he overshot the groove and waved off wide on the starboard side. No approach light was showing, so the LSO requested a gear check from the pilot and received a "down and locked" report at the 180° position. This pass was normal although a little fast, but as the A4D passed the LSO platform only an instant before touchdown, the LSO saw his gear was UP!

Wave-off lights were flashed, but they were too late as the A4D hit hard on its drop tanks, and slid off the angle deck in a nose low attitude, flame belching from the tailpipe as the pilot pushed the throttle to the firewall!

Skimming the surface of the calm sea, the A4D slowly gained altitude and orbited the ship until another A4D joined up as escort. They were then ordered to an airfield ashore and given their steer.

As the two planes approached the field after an uneventful trip inbound, the lead pilot attempted to lower the landing gear. Nose and left main gear extended and locked, but the right main wheel extended only to about a 45° angle. He tried to retract the gear again, but although the nose and left wheel retracted and locked UP, the right wheel remained partially extended.

Negative "G's" didn't help, so he warned his wingman to stay clear and then rolled inverted and applied negative "G's" again! The wheel fell into the wheel well and the door closed!

Rolling back to level flight, he now notified the tower that he would land wheels up into the Morest gear and requested the runway be foamed. This sharp air station tower told him that they had been informed of his divert, and the job was already nearly completed.

After orbiting ten minutes to allow completion of the foaming job and to let his wingman land, our intrepid aviator now made a full flaps-down, gear-up, straight-in approach to the foamed strip. He extended the speed brakes when he felt he had the runway made, flared and touched down lightly at approximately 110-115 knots. He shut the engine down immediately, and the A4D slid only 600 feet to a gentle stop, riding it out on the battered but still intact drop tanks. No injuries. The damage to the A4D after TWO wheels up landings? Minor! an INCIDENT report was the only paper work required!

Grampaw Pettibone says:

Bust my britches! Only the sturdy A4D's noted ability to survive a wheels-up boomer on the tanks saved this pilot from bustin' his you-know-what! I can't say I endorse his method of retracting a stuck wheel, but he sure can fly that bird (except for landing, that is).

If it's possible to have a time when the check-off list is more important than another time, it's during carqual. A pilot gets pretty wrapped up in line-up, meatball, attitude and altitude and it's all too easy to overlook routine cockpit checks unless the check list is used.

Unless there's a low fuel state involved a "no approach light wave-off" should be mandatory. Until BUWEPS licks the burnt-out light bulb problem, those visual gear checks just gotta be SOP for the LSO's. "Pilot, recheck your gear" just doesn't do it.

'The One Best Way'

NEW STANDARDS FOR NAVAL AIR

ONE OF THESE DAYS each Naval Aviator, whether he be a tow pilot at Atsugi, a CAG in the Sixth Fleet, or the patient wheel warden of an SNB, is going to meet NATOPS—and be better for it.

NATOPS stands for Naval Air Training and Operating Procedures Standardization program.

Planned or already firm are these major provisions of the new program which will benefit all Naval Aviators:

- Issuance of new, comprehensive operating manuals for all types of current aircraft.
- Annual standardization checks.
- Assignment of NATOPS instructors, evaluators and coordinators to squadrons and commands.

Aims of the program are simple: to find the optimum way of performing every operation in naval flying from pre-flight to yellow sheet; to train every pilot in the use of these methods; and to insure that all pilots use these methods and procedures at all times.

Much hard work has already gone into laying a firm foundation for the program. The actual writing of NATOPS manuals for current carrier types and for the F9F-8T and T2V began in late 1960.

Developing and selecting the methods and procedures to present in the manuals has forced a close look at all aircraft operating procedures. Many differences have been found. Groups of "pro's," primarily in the Replacement Squadrons, preparing each manual have studied all the methods in current use, analyzed these methods in detail, and then put together the best parts of each to arrive at the best method. Top operational pilots and flight crews have made their best trade secrets available through these manuals.

In developing the standardized methods and procedures, the experts have to study all the official literature bearing on flight operations—flight handbooks, check lists, tactical publications, OpNav Instructions, etc.

This comprehensive review offers a golden opportunity to eliminate conflicting information and instructions. It isn't being wasted. Commands preparing NATOPS manuals have to submit recommendations for changes in all flight handbooks, directives, etc., to eliminate conflicting instructions and to make them consistent with the procedures in the NATOPS manuals. Keeping all directive literature up-to-date will be one of the continuing responsibilities of the NATOPS organization.

The first manuals should be in the hands of squadron pilots before the end of summer, and work has already begun on those for all other types of Navy aircraft.

As soon as manuals are distributed, instruction in the approved methods will begin. Standardization flight checks are scheduled to start two months later. Every pilot will have an annual check in every model aircraft he flies.

Standardization checks will include written examinations and performance demonstrations on the ground and in the air. Flight simulators and NAMO trainers, when available, will be used to evaluate the pilot's mastery of emergency procedures and his knowledge of the aircraft systems.

Results of this comprehensive evaluation will give both the pilot and his commanding officer a complete "proficiency profile," showing all strengths and weaknesses. This information will be a big help to the commanding officer in developing and guiding the squadron's training program.

To carry out the program, a special NATOPS organization will include a Standardization Instructor in each squadron, Standardization Evaluators for each model aircraft, and a Standardization Coordinator on the staff of each major aviation command. This organization, using its own

channels of direct communication, will be responsible for developing improved methods and procedures, keeping the NATOPS manuals and other materials up-to-date, and insuring that standard methods are used in practice.

A Squadron Standardization Instructor will assist the commanding officer and operations officer to indoctrinate all squadron pilots in the approved methods. He will administer the NATOPS program for the C.O. and check each squadron pilot or crew at least once a year.

To be picked for this assignment, a pilot must have an extensive operational background, be highly qualified in a particular aircraft, and be capable of teaching other pilots NATOPS methods and procedures.

Eventually each of the five major aviation commands—AirLant, AirPac, Air Fleet Marine Force, Atlantic and Pacific, and the Naval Air Training Command—will have a Standardization Evaluator for each model of aircraft operated in its command. Evaluators will be assigned to the staff of RAG squadrons and Marine Air Wings in primary duty billets. Initially, there will be about 40 Standardization Evaluators for the entire Navy and Marine Corps.

Annually these experts will evaluate the program of every squadron flying their type of aircraft. As a part of this check, the squadron Standardization Instructor and at least one other squadron pilot or air crew, selected at random, will be checked.

Results of the annual appraisal of the squadron's program will be furnished the squadron commanding officer, his immediate superior and the type commander in order to insure corrective action for any deficiencies.

Standardization Evaluators will be required to know literally just about everything to be known about operating their model aircraft. They will conduct a continuous review of all publications and instructions concerning the model and will visit or observe special exercises, tests, and projects involving their bird.

All Evaluators for a given model will keep in close touch with each other so as to cross-feed information and make sure that any weakness in operating doctrine is spotted.

Standardization Evaluators themselves will not escape the annual flight check in model inasmuch as Evaluators from different commands will check each other.

In addition to Pilot Standardization Instructors and Evaluators, there will be standardization crews for patrol and VAH types as well as Naval Aviation Observer Standardization Instructors and Evaluators for types such as the F4H and A3J.

Standardization Coordinators on the staffs of the major aviation commands will oversee the operation of the command's NATOPS program while maintaining liaison with their counterparts on other staffs.

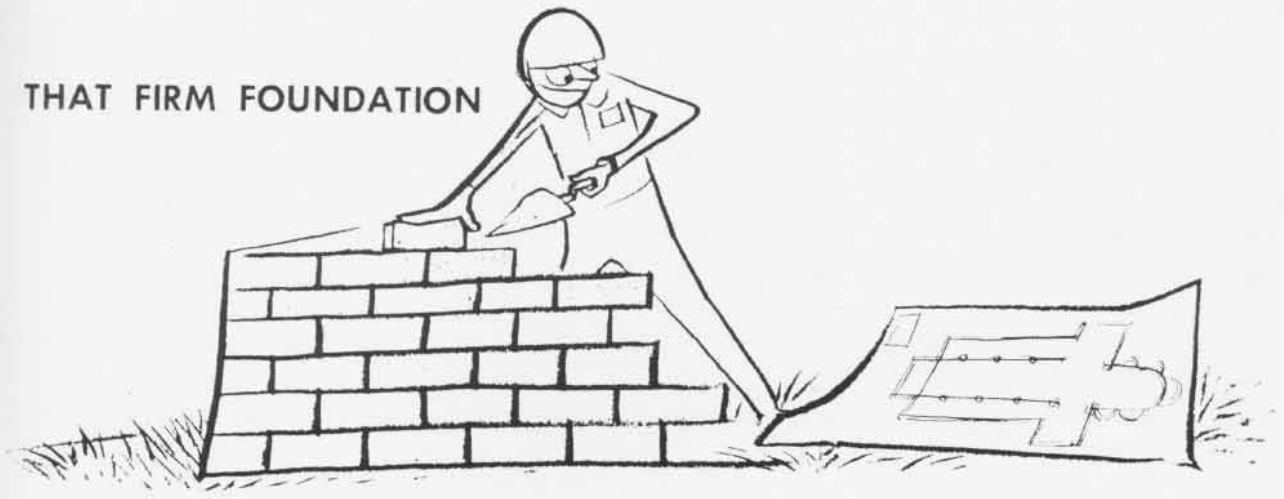
The Aviation Training Division of DCNO(Air), aided by a Standardization Advisory Group, will administer the program as a whole and resolve any questions which the Standardization Evaluators and Coordinators have been unable to work out at lower levels.

The Standardization Advisory Group, which will meet semi-annually or oftener if necessary, will be responsible to CNO for reviewing NATOPS manuals and preparing all changes. They will also advise on ways to improve the program as experience with it is gained. This group will have representatives from the major Navy and Marine Corps aviation commands and BuWeps. Experts from other commands will advise on particular problems.

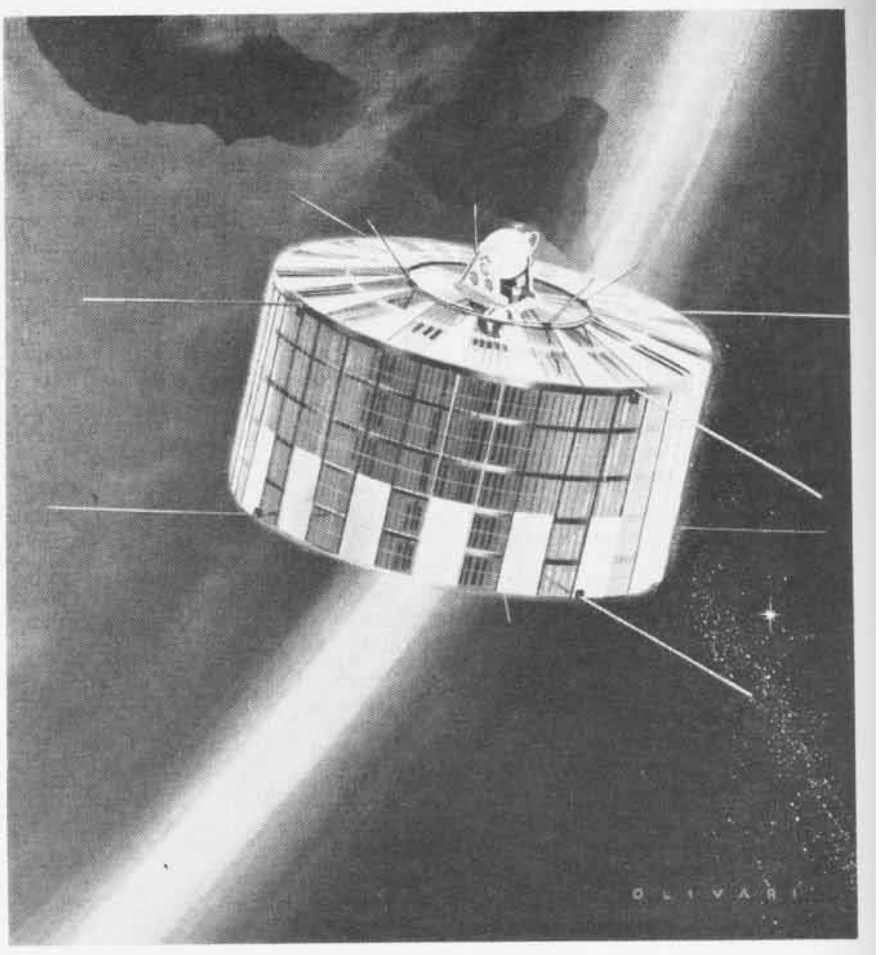
Some people view the idea of everyone in Naval Aviation doing everything "the one best way" with some misgivings. They fear that general use of standardized procedures, while it may reduce the accident rate, will result in a reduction of a pilot's ability to "think on his feet" and deal flexibly with emergencies and combat situations. Experience in other fields has proved that fear unfounded.

The Aviation Training Division, which has CNO responsibility for the NATOPS program, answers the argument this way: "This program is only a continuation of the standardization which all pilots are taught in the Training Command. As we know, the Training Command has one of the most effective organizations of its type in the world today and its safety record is outstanding. Standardization has been a major key to success.

"The new NATOPS program was developed by the users for the users. It will be modified, as we go along, by these same individuals. New tricks of the trade will be passed around quickly for expert evaluation and, if sound, for use by all hands. The end result will be increased operational readiness through increased safety, brought about by improved pilot techniques."



TRANSIT SCORES IN NEAR PERFECT ORBIT



By Marie Pfeiffer, BuWeps

NAVY'S TRANSIT 4A satellite, smallest and lightest in a series to provide a precise, world-wide, all-weather surface navigation system, was launched into orbit at 2323.5 EST on Wednesday, 28 June, from Cape Canaveral. Its booster was a two-stage *Thor-Able-Star* rocket which was also used for other *Transit* satellites.

As an economy measure, two additional secondary satellites in tandem rode with *Transit 4A*. These were the 40-pound *Solar Radiation III* measurement satellite—third in a series developed by the Naval Research Laboratory—and the 40-pound *Injun* satellite—a space probe developed for the Office of Naval Research by the State University of Iowa to measure the intense radiation of the Van Allen belt and the aurora. The *4A* separated through spring force from the other two. These two orbited as a duet and are operating with modified success. This was the first time a triple-decker payload was attempted by any nation. Single satellites have been sent aloft as riders on Navy's earlier *Transits*.

The *Transit 4A* is operating on all four of its frequencies. It is now in a near circular orbit, with an apogee of 540 nautical miles and a perigee of 484 nautical miles, providing an expected orbital life of more than 100 years. It is circling the globe every 104 minutes and is faintly visible, weather permitting, everywhere in the United States.

Technical Advances

The new 175-pound *Transit* features a number of technical advances over previously launched *Transit* satellites. One highly significant improvement is a radical change in configuration and structural design which has resulted in a substantial weight reduction over previous 250- and 265-pound *Transits*. From the inception of the Bureau of Naval Weapons development program for navigational satellites, a major objective has been to achieve an operational satellite design of less than 100 pounds weight. A payload of this weight would substantially reduce the power requirement for the booster engine and would be compatible with the lower cost *Scout*.

The light-weight exterior shell of the *4A* is made up of a cylindrical support and hinged panels. These panels can be either in a folded or unfolded configuration. If folded, the hinged panel assembly, which is supported on the cylindrical support structure, would assume a tall cylindrical shape. The *4A* satellite, however, was launched with the assembly in the open, or unfolded, position, giving it a drum shape. Each of its rectangular panels is made of a front and back facing of thin aluminum sheet between which a core of aluminum honeycomb material is bonded. The panels are attached to each other and to polygon-shaped top and bottom panels by piano hinges.

In its cylindrical or folded launch mode, the diameter of the *4A* would measure only 22 inches, but would become "full blown" upon orbiting.

Over 11,000 solar cells are mounted on the panels of *Transit 4A*. The power to operate the satellite is generated from the sun by the solar cells and stored in the nickel-cadmium batteries. The main battery and the auxiliary battery with associated solar cells form two independent power supplies, providing increased reliability of the system. The nickel-cadmium battery cells are hermetically sealed and contained in tubular cans that are attached to the shell support structure.

Nuclear Power Used

The *Transit 4A* satellite contains the first nuclear auxiliary power source to be flown in space. It is a small, light-weight, radio-isotope-fueled thermo-electric generator developed for the Atomic Energy Commission under contract with the Martin Company. The generator, about the size and shape of a grapefruit, will provide a small amount of direct electrical current to instrumentation and two of the four transmitters in the satellite. Its fuel is theoretically sufficient to provide continuous power for many years.

Arranged in turnstile arrays are *Transit 4A*'s single-element antennas. This is a departure from the silver-painted spiral band antennas used on previous *Transit* satellites. An array of rigid antennas and an array of folding antennas are mounted at the satellite. The folding antennas were top and at the bottom edges of the new extended when the nose fairing of the launching vehicle was released.

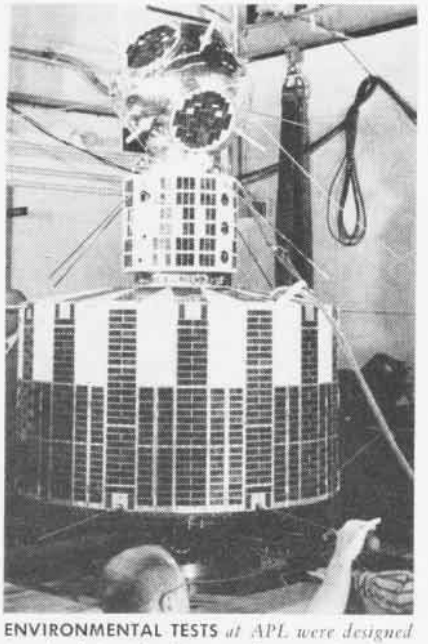
This latest Bureau of Naval Weapons navigation satellite, developed by the Applied Physics Laboratory of the Johns Hopkins University, Silver Spring, Md., includes two transmitting systems, a memory system, a command system, a telemetry system, and two power supplies. The transmitting systems operate from a single ultra-stable crystal oscillator. The telemetry system sends information on the temperature and operating conditions of components. Through the command system the mode of operation of the satellite can be changed from the ground. By command signals, the transmitting systems, memory and telemetry can be turned on or off or used in different combinations.

Structure of the *4A* satellite consists of two basic elements, the "accordian-pleated" expandable external shell, and an instrument support structure. The instrument support structure is an independent assembly on which the electronic packages are mounted. It thus can be completely checked out before it is inserted, cartridge fashion, into the external shell. This instrument support structure is made of sheet metal and is mounted on a base which includes a flanged attachment ring for use in fastening the satellite to the launching vehicle.

Electronic components in *Transit 4A* are arranged within the instrument support structure to provide an acceptable thermal environment.

The research work of the *Transit*'s two pickaback satellites not only contributes directly to the parent *Transit* with data that can improve *Transit* component design, but also adds to Navy's understanding of communications and the environment that astronauts must be prepared for in space.

BuWeps technical development program of the *Transit* navigational satellite system has consisted of a research and development phase, much of which has now been completed, and an operational engineering phase. The research and development work has been under way on a significant scale since early 1958. Originally, the project was under the Director of the Advanced Research Projects Agency, with management and technical direction under the Navy. This early phase of the program was concerned primarily with the proving of feasibility. This goal was accomplished with the first successful *Transit* orbit achieved on 13 April 1960.



ENVIRONMENTAL TESTS *at APL were designed to simulate vibrations undergone in space*

Earlier Transit Program

In early May 1960, the management of the *Transit* program was formally transferred from ARPA to the Bureau of Naval Weapons. The second phase of the program, now underway in BuWeps, is the development of an engineering prototype of the operational system, including the development of shipboard navigation gear. During this phase intense effort will continue on:

(*a*) development of increased system reliability

(*b*) accuracy improvement including research and experiments in the refraction and geodesy areas

(*c*) system integration and shipboard operation

(d) application to aircraft navigation.

Measurement of the Doppler shift, or the change in pitch of a signal as it approaches and recedes from the listener, is the basis of the entire *Transit* system. The system is especially attractive for shipboard use because it is dependent only upon the measurement of two quantities aboard ship—time and frequency, both of which are independent of ship motion.

Transit, with the utilization of any one of four operational satellites in orbit, will give precise navigation to within a tenth of a mile, or better, at every spot on earth—land or sea—just as accurately in the Antarctic as it does off the coast of Brazil. An all-weather system, it will operate in stormy weather, through overcasts, by day and by night. It is a passive system and so a ship need not transmit to fix its position, as is the case with radar navigation. The operating *Transit* system, as planned, will not depend on foreign sites; all the tracking stations, computer centers, and injection stations can be located in the continental United States. It is more accurate than any world-wide navigation system we have.

Navy now has had four successful launchings of the *Transit* satellites.

The *1A* and *3A* did not orbit because of malfunction of the launcher vehicle.

The *1B*, *2A*, and *4A* are in orbit—launched by the *Thor-Able-Star* missile from the Atlantic Missile Range at Cape Canaveral. The *3B* has reentered the atmosphere and burned up after a brief but useful life of 38 days.

Transit 1A was launched 17 September 1959 by means of a *Thor-Able* vehicle at Cape Canaveral. Spherical in shape, it had two banks of solar cells around its equator, with broadband antennas painted on the shell in a spiral pattern. Although the launching vehicle failed to place the satellite into orbit, sufficient data were obtained to verify the feasibility of satellite tracking and of navigation by Doppler analysis.

Transit 1B was successfully launched on 13 April 1960 by means of the two stage *Thor-Able-Star* at Canaveral. It became the world's first navigational satellite. Similar in appearance and function to the *1A*, it is currently circling the earth at heights between approximately 230 and 456 miles, although now silent. The BuWeps Astronautics Group explains that deterioration in a thermal switch has prevented the batteries from building up voltage to operate the transmitting systems. However, the excellent data received from the satellite continue to be used in geodetic studies and in developing procedures for predicting orbits as far as 90 days ahead. In one of the experiments a navigation fix was made on Austin, Texas, and this fix agreed with the first order survey position within ¼ of a mile. This demonstrated the ability to perform navigation with the precision that may be required for almost any military application. Data from the *1B* satellite also have been used for preliminary experiments in determining the precise location of the *Transit* tracking station.

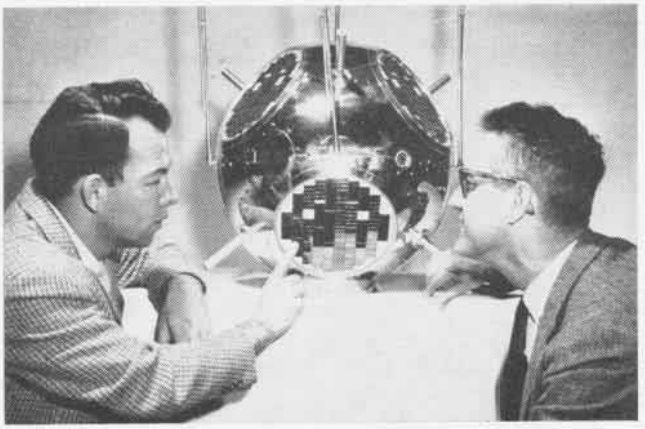
Transit 2A, also spherical in shape and similar in function to the *1B*, was launched 22 June 1960, at a higher inclination to the equator, 67½ degrees, in order to obtain additional data on the earth's geoid. It is considered by the BuWeps Astronautics Group as a completely successful experiment. Its signals are providing important information on the ionosphere, although it now transmits only during sunlit passes, resulting in a recent decrease of quality of data. The *2A* contains, as did *1B*, an infrared scanner developed by the Naval Ordnance Test Station for measuring cosmic noise above the ionosphere. New in the *2A* was the digital clock or time standard which could lead to a new global time system, itself a significant change in the pattern of navigation. The satellite, completely solar powered, includes twice as many solar panels as its predecessors.

Transit 2A was the first to actually carry an independent auxiliary satellite pickaback into orbit and release it into its own separate orbit. Riding on this *Transit* was a 20-inch *Solar Radiation I* measurement satellite designed and developed by the Naval Research Laboratory to detect and analyze solar radiation and provide new information on the ionosphere. Bound to *Transit* by a metal ring, the 40-pound unit was hurled from the *Transit* by a spring, after orbital injection from the second stage rocket. The NRL device transmitted the first continuous measurements of solar activity in X-ray and ultraviolet regions. These solar weather reports can be correlated with a host of ground level observations to help unravel the mysteries of ionospheric behavior as well as the mechanisms of solar storminess. As time goes on, the future satellites should contribute many records of solar storms.

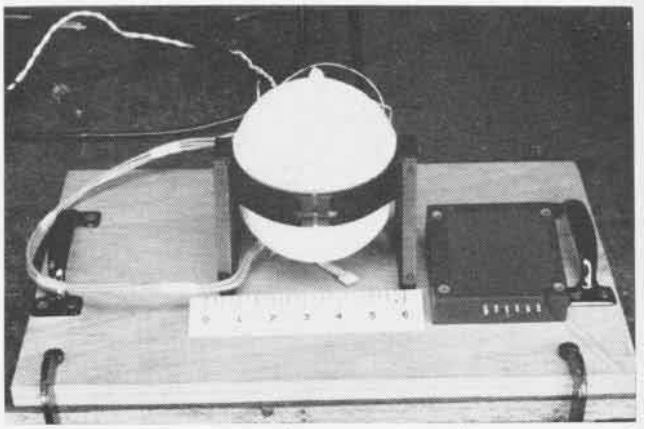
Transit 3A was launched from Cape Canaveral on 30 November 1960, by means of a *Thor-Able-Star* booster. The satellite failed to orbit because the launching vehicle developed a malfunction and was destroyed. However, the satellite was transmitting on all four Doppler frequencies, and signals were received for 311 seconds after lift-off by the NASA Minitrack Station at Cape Canaveral.

Transit 3B

Transit 3B, with its accompanying 57-pound *Lofti* (Low Frequency Trans-Ionospheric) satellite, was launched by a *Thor-Able-Star* on 21 February 1961 at Cape Canaveral. Receipt of Doppler signals by the *Transit* tracking station at South Point, Hawaii, approximately one hour and 26 minutes after time of launch, gave the first indication that the satellite was in orbit. Analysis of data received shortly after launch showed that the intended circular orbit of 500 n. mi. was not attained, causing the satellite's life to be measured in weeks instead of years. Telemetering and other data indicated a failure in the *Able-Star* programmer which prevented restart of the *Able-Star* engine, and also prevented separation of the *Transit* from the *Lofti* pickaback satellite and the *Able-Star* vehicle. The *Lofti* was also developed by NRL.



NAVAL RESEARCH LABORATORY *scientists, Martin J. Votaw and Dr. Talbot A. Chubb, discuss solar cells used on Solar Radiation III satellite.*



THE SNAP GENERATOR, *carried as an atomic auxiliary power unit in Transit 4A, weighs 4.5 pounds and is fueled with plutonium 238.*

SCIENTISTS *at Applied Physics Laboratory mask out solar cells during last minute circuitry tests which preceded the launch of Transit 4A.*

TRANSIT'S NUCLEAR *powerplant is fastened to its base before vibration tests. It was the very first nuclear power supply unit used in space.*

Included as a secondary payload in the *Transit 3B* was the U.S. Army's geodetic *Secor* (Sequential Collation of Range) or transponder designed to receive and return a signal transmitted to it. Its purpose was the conducting of research and development on a technique for using the satellite as a reference for accurate terrestrial measurements. The test equipment operated successfully. The Army Map Service, Corps of Engineers, intends to utilize such a system to pin-point map bases on earth, which map survey teams will use in preparing a more accurate system of map-making. In a cooperative program involving Navy's *Transit* satellite, it is also designed to determine the true shape of the earth.

Eight *Transit* satellite tracking stations are now in operation in the United States and abroad; others are being designed and constructed by the Naval Ordnance Test Station, China Lake, Calif. The Pacific Missile Range is responsible for operating the world wide *Transit* tracking station network. An experimental data injection station is in operation at the Applied Physics Laboratory. Computation and analysis of *Transit* Doppler data are being carried out at the Applied Physics Laboratory and at the Naval Weapons Laboratory, Dahlgren, Va., where operational computing procedures are being developed.

A collateral result of the successful tracking of the Doppler signals by stations in the western hemisphere is the utilization of the precision tracking techniques developed under *Transit* on other satellites, notably the U. S. Air Force *Discoverer* satellites launched from Vandenberg Air Force Base. A navy *Transit* station, in April 1961, was the first to determine that *Discoverer XI* was in orbit, as part of a joint experiment of the Navy and Air Force to employ the *Transit* techniques as a tracking system.

Navy's program calls for an additional *Thor-Able-Star* launching of a *Transit* payload in 1961 prior to launching lighter weight satellites that are compatible with the less expensive *Scout* launch vehicle.

The Navy feels that gratifying results have been achieved with the experimental satellites placed in orbit. It has confirmed the feasibility of satellite navigation and has demonstrated accuracies beyond its early expectations. Its prime efforts now are to produce the operational satellite and introduce the *Scout* launch vehicle into the system at lower operational costs.

Reducing the size and weight of the *Transit* operational satellite to be compatible with *Scout* boosters is an extremely significant achievement. For example, initial *Transit* satellites weighed about 265 pounds and required a booster vehicle costing four to five million dollars per launch. Reducing the weight of the operational *Transit* satellite so that *Scout*-type vehicles can be employed will lower the cost to about one-million dollars per launch.

This approach can be applied to satellites for geodesy, communications, weather, surveillance, and later many others. The Navy feels that a small payload booster system—with long stowage life and simplified operating techniques—can be launched at sea as well as on land, and that economy, safety, and greater usefulness will be achieved.

It is the plan of the Bureau of Naval Weapons Astronautics Staff to make the *Transit* satellite navigation system available to seafarers of the world beginning in late 1962. This space system will be one of the earliest space technological benefits to mankind. *Transit* will make possible precision navigation "shipways" similar to our airways; the peaceful as well as military uses will greatly enhance the safety of life at sea.

New ONR Chief Scientist

Dr. Weyl to Replace Dr. Killian

Dr. F. Joachim Weyl has been appointed Deputy Chief and Chief Scientist of the Office of Naval Research. He will replace Dr. Thomas J. Killian who has resigned to accept a position in private industry.

Dr. Weyl, presently Research Director of the Office of Naval Research, has been associated with ONR continuously since 1947 when he joined the Mathematics Branch. In 1949 he was made head of the branch and in 1953 was appointed Director of the Mathematical Sciences Division. In 1958 he became Director of the Naval Analysis Group of ONR, and in that same year, he was made Research Director.

The new Chief Scientist received his Ph. D. from Princeton in 1939, was employed by the Navy's Bureau of Ordnance during WW II and later participated in work on the first atomic bomb trials at Bikini.

He is the son of the internationally known mathematician, Professor Hermann Weyl, who came to this country in 1933 to join the Institute of Advanced Study at Princeton after resigning from the University of Gottingen in protest against the Nazis.

WW I DIARY RECOUNTS AIR/SEA SAGA

WE ARE NOT positive of our location, but are going to sea. Send help. If you should not find us, say we died game to the end."

Such was the message Ens. Kenneth R. Smith sent by carrier pigeon from his seaplane drifting somewhere in the Bay of Biscay on 23 November 1917. With water rising rapidly and the prospects of rescue all but abandoned, the young Naval Aviator and his two crewmen faced the end.

It was Naval Aviation's first airplane to crash-land while on a combat patrol in Europe in WW I. The communication and air/sea rescue techniques were a far cry from the effective speed of such operations today.

Base of the crashed seaplane was a little fishing village of about 3000 inhabitants 18 miles from St. Nazaire, called Le Croisic. The United States had established there on the French coast its first Naval Air Station overseas as a part of WW I operations.

In *The History of the Yale Unit*, it is pointed out that young Smith and fellow members of the unit, which had become part of Naval Aviation, were sent to Le Croisic in order that the American forces might "help to drive German submarines farther away from the coast and to protect the immense amount of transport traffic in and out of Saint-Nazaire . . . .

"The air station was situated on a tiny island separated from the main street of the village by a moat or canal. A rugged indentation of the coast formed a little sheltered harbor which was favorable for seaplanes at high water. An eighteen-foot rise and fall of tide, however, made it necessary to lower machines by means of a crane when the bay was mostly sand and mud."

The building of this station on the Bay of Biscay commenced on 26 July 1917 when 19 German prisoners started to level the ground on which were later erected hangars and barracks.

By 29 October, three ensigns, 13 enlisted men (two of whom were pilots), and 11 observers arrived, some from the United States and others from the French flying schools at Tours and St. Raphael.

Though the first flight from Le Croisic was made 13 November 1917, it was not until five days later that the first patrol flight was made and operations officially started. From that date, weather permitting, patrol and convoy flights were made regularly with six French seaplanes of the Tellier type. Communication facilities were inadequate, and since the time and position of passing convoys were uncertain and there were no adjoining air stations to cooperate in escorting convoys along the coast, long flights were necessary.

TELLIER FLYING BOAT, TYPE USED BY ENS. SMITH, WAS FRENCH SINGLE-MOTORED SEAPLANE

A contemporary record gives this schedule: "At the commencement of patrol and convoy flights, an 'Alert Section' consisting of one fourth of the total handling crews, two observers and two pilots, was put on watch. They stood watch from daylight to darkness, always holding two planes in readiness with bombs attached, all instruments and equipment either in the planes or close at hand, so that it was but a matter of five minutes to lower the planes and get off the water in case a submarine warning was received."

On 20 November when two German mines were reported off Les Grands Cardinaux, two seaplanes were sent out and the district was patrolled, but the mines were not discovered. On 22 November submarines were sighted south of Belle Isle and a seaplane was sent out on patrol, piloted by Ens. Kenneth R. Smith with Homer N. Wilkinson, Electrical Mechanic, and T.J. Brady, MM2C.

The Tellier, which carried only enough fuel for a four-hour flight, failed to return. The search was begun, but even with some idea of where the aircraft might be, it could not be found.

Meanwhile, on the Tellier as the hours passed, so did hope. Thinking they faced death, Ens. Smith wrote an account of what had happened. The very use of the past tense reflected his sense of finality. His notes are now part of Naval History.

Thursday, Nov. 22, 1917

Weather conditions were not ideal for flying, clouds being very low and quite a sea running.

After leaving Le Croisic, we started south steering course 195. On reaching Ile d'Yeu, found our drift to be considerably to the East. After picking up Point Breton on Ile d'Yeu, we sighted a four-masted bark, in ballast with auxiliary engine, to the N.E. We circled over her a number of times, increasing our radius on each turn until we were nearly out of sight of Ile d'Yeu. We then left the bark and headed for Ile d'Yeu. After searching the shore for mines and submarines, returned to Pt. Breton.

From Pt. Breton we steered course 29 for 45 minutes. We then headed due East for 30 minutes at altitude 50 meters. Motor died and we were forced to make a tail-to-wind landing. We found it possible to land the Tellier in rough water. Dispatched at 2:30 P.M. pigeon with following message:

"Left Ile d'Yeu at 1:10 P.M., headed 29 for 45 minutes. Then direct East 30 min. had to come down, big sea running. Send all aid. . . ."

Could not tell for certain our location. We

took watches during the night. One bailed while the other two slept. As we could not get motor started, we thought over all possible things that could happen to it. Wilkinson found left gas tank had not been feeding; but too late to fix it as we could not see. Passed a very uncertain night. We knew they would do all possible things to help us.

Friday, Nov. 23, 1917.

Sent pigeon at 7:40 A.M. and message as follows:

"Sighted last night two lighthouses on starboard bow which we considered Ile d'Yeu. Send torpedo boats and aeroplanes. Have no food. We are taking in water. We are not positive of our location, but are going to sea. Send help. If you should not find us, say we died game to the end."

Put in a new spark plug, cleaned magneto, shifted gasoline from left to right tank. We were all so seasick that we could not work to best advantage. Bailed water out of boat. Wilkinson finally got motor started at 11:40 A.M. Saw hydroplane and "blimp" to the North of us. Did not give up hope. Beautiful day. Got motor going and started to taxi towards Ile d'Yeu. We were not making much headway on account of the sea. Our left pontoon had filled with water.

Finally decided our only hope was to try and get machine off water. As a result of trying, I broke left wing and got ourselves into a hell of a shape. Things began to look black. There was no finding fault with anyone. Could not help marvelling at the morale of the men. It was a case of heroic bravery on their part to see their only hope smashed.

We took watches during the night, first lying on wing, then bailing, then sleeping. Wilkinson turned to and got all ready to cast adrift the left wing. We all decided to die game to end . . . .

Wing began to crumble. We all decided to let it stay on as long as possible. Sea began to grow bitter towards evening, and the water began to come in. We all hoped that we would be able to ride out the night. Very uncomfortable night and we were all growing very weak. Very long night. Our hopes were beginning to go very low, but no one showed it.

Saturday, Nov. 24, 1917

Day finally came. Wing getting near to boat as it crumpled. It was heart-rending. We had to bail and stay out on wing-tip. As waves came over, we began to feel lower and lower. It was finally decided to cast off wing, and let what might come. We tried to get other wing ready to cast off, but we could not get off nuts as we were so weak and tools were very inadequate.

We were going over gradually on starboard side. We were all on port side trying to keep her righted. We then saw that there was no hope of us staying up much longer unless we could get wing off. We had just about given up everything when Wilkinson let out a yell that something was in sight. We were not able to believe our eyes. We thought it was a submarine, but we did not care. If it was a submarine, we hoped it would blow us up and end it all.

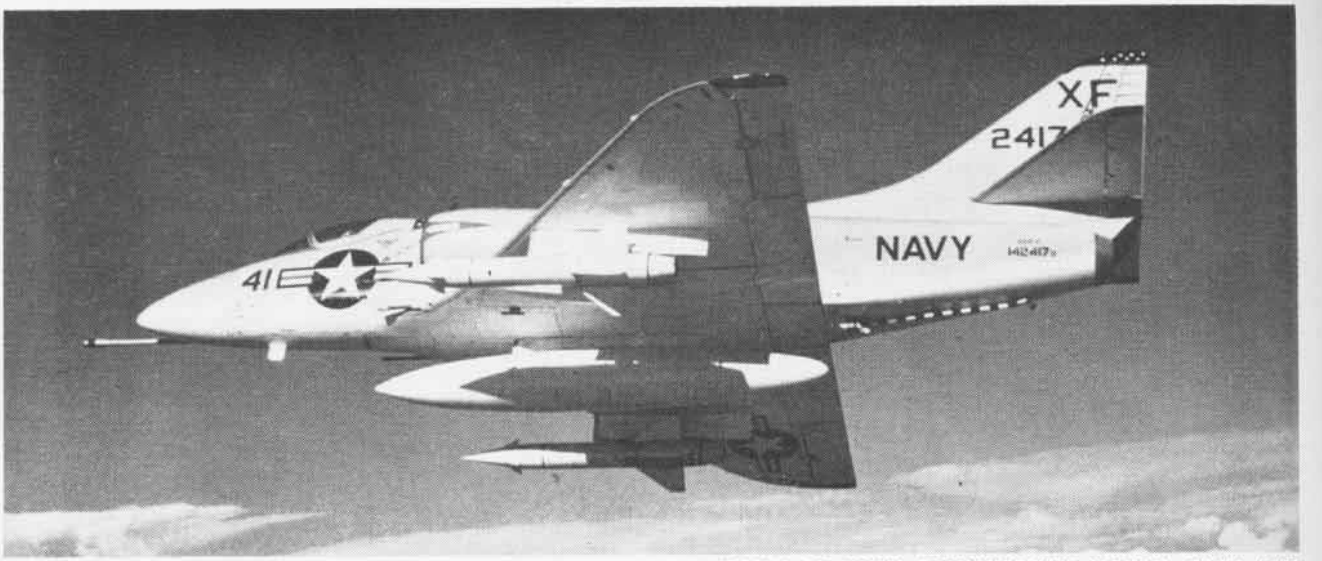
It was no U-boat. It was a French destroyer that picked up Smith and his two companions southeast of Rochebonne and took them to La Pallice. Along with patrol boats, motor torpedo boats and destroyers in the area, the French DD had heard of the missing seaplane via telephoned requests for search all along the coast.

The rescue destroyer had arrived none too soon. The badly damaged plane sank within minutes after the crew was taken off. The men suffered from exposure, but all recovered.

Machinist Wilkinson, in making a report after the rescue, wrote, "[Mr. Smith] was brave and courageous from the first. I never heard a whimper from anyone no matter how close we were to death. The accident was no one's fault . . . ."

The officer, who had assigned Ken Smith and his crew to the patrol said, "We learned to equip our planes . . . with every possible emergency appliance." The lesson, "hammered in by experience," taught the Le Croisic officers that signalling devices, a sea anchor and emergency rations were absolute musts, and that since three men constituted too heavy a load, only two should be sent. "All of which was a darned good thing for the rest of us, but rather tough on Ken. He had to be the goat." ★ ★ ★

SPIRIT OF CAMARADERIE BETWEEN LE CROISIC AND NAVAL AIR STATION WAS MEMORABLE. U. S. NAVY SEAPLANE FLOATS OFF SHORE



NOW IN FLEET USE, EARLY BULLPUPS WERE GIVEN EXHAUSTIVE TESTS BY VX-5 AT NAVAL ORDNANCE TEST STATION, CHINA LAKE

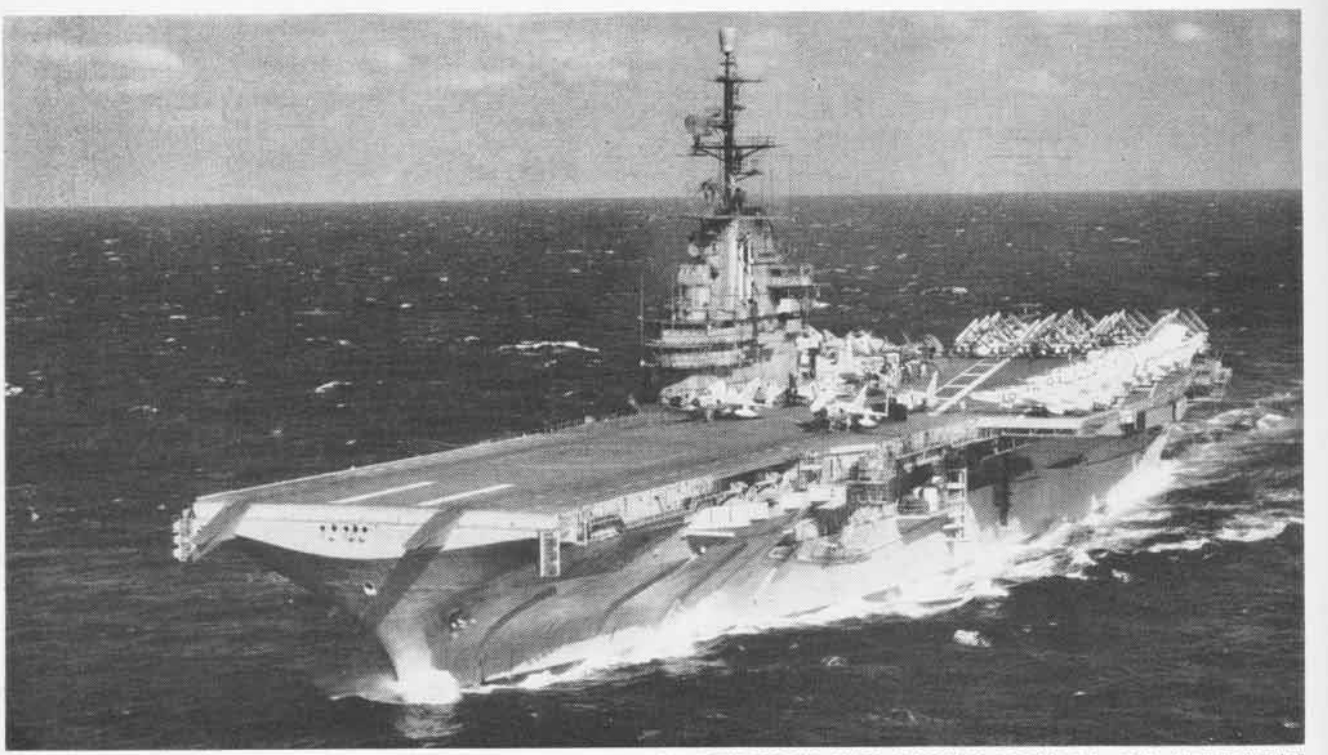
B-DAY IN MED:

BANTAM BOMBERS, BULLPUPS & BULLSEYES

USS INTREPID, one of three attack carriers in Task Force 60, sails southward along Sardinia's rugged east coast, bound for a rendezvous point off one of the island's beaches. Big *Forrestal*-class carriers *Saratoga* and *Independence* approach the island from the northwest.

In two days, aircraft from the three carriers will pound the beach with missiles, rockets, and bombs—battering "enemy" positions pointed out by the Fleet's air controllers.

To the southward, another force moves up. It is Task Force 61, com-



USS INTREPID, WITH CARRIER AIR GROUP SIX ABOARD, POINTS FOR RENDEZVOUS WITH CARRIERS SARATOGA AND INDEPENDENCE

prising heli-Marine carriers and landing craft which will place troops ashore after Task Force 60 has blasted away the beach's defenses.

Activity reaches a peak as the United States Sixth Fleet begins another training exercise for a D-Day it hopes will never come.

Aboard the three carriers of Task Force 60 are some 300 battle-ready aircraft which can be hurled into the air on instant notice. The planes are armed with the latest airborne weapons, including conventional guns, bombs, nuclear weapons, air-to-air missiles, and air-to-surface *Bullpups*—one of the most lethal weapons ever designed for close support.

Some hours remain before the air strikes begin, so Cdr. Dale Klahn, Commander of Air Group Six aboard the *Intrepid*, uses this time to sharpen the proficiency of the 600 men in his charge. When *Intrepid* ducks a seasonal storm and steams into clear flying weather, planes take to the air. There are qualification landings, gunnery drills, and attack practice.

From dawn, when the catapults sling the first jets into the air, until dark, the planes roar off for exercises upstairs.

Like clockwork, the catapult crews send jet fighters and bombers aloft. Behind the ship, a tow target trails in the wake, a prey of fighter pilots with 20-millimeter guns.

Then the area is cleared of other aircraft and the gunnery target is hauled in. Cdr. Robert Kasten, commander of VA-66, begins a 30-degree dive in his A4D-2 *Skyhawk*, the plane's nose pointed at a smoke pot dropped from the carrier.

A full three miles away from his target, Cdr. Kasten launches a *Bullpup*, then with short flicks on his control switch he radios commands to the sleek missile that darts out ahead of his plane.

Seconds later, the *Bullpup* blows the smoke pot out of the water, leaving only a large black cloud to mark the spot. (Had he aimed the *Bullpup* at the tow target used for gunnery practice, only splinters would have remained.)

Bullpup is a proven air-to-surface weapon. It is becoming a vital part of the Fleet's armament. Needs first recognized in World War II, and emphasized in Korea—where enemy ground fire inflicted heavy losses upon dive bombers flying low to insure accurate deliver of their bombs—are being met by *Bullpup*.

Operational since April 1959, *Bullpup* gives the pilot a stand-off capability—the important ability to launch the weapon while the pilot is still far from enemy ground fire.

Bullpup employs a pilot-controlled radio guidance system which has contributed to high accuracy. Because of this accuracy and its inherent reliability, one *Bullpup* with a 250-pound warhead can do more damage to a target than many 250-pound bombs

VA-66 SKIPPER, CDR. BOB KASTEN, CHECKS BULLPUP ON A4D

FROM PLANT TO PLANE, MISSILE REQUIRES MINIMUM HANDLING


BANTAM BOMBER IS READIED BY CREWMEN


. . . AND THEN IS LAUNCHED ON A ROUTINE TRAINING EXERCISE IN THE MED

OUTSTANDING FEATURE IS COCKPIT CONTROL OF BULLPUP WHICH AFFORDS PINPOINT ACCURACY AND INCREASES PILOT SAFETY

delivered by conventional methods.

Even as Cdr. Kasten blasted one target from the water, below decks crewmen on the *Intrepid* prepared more *Bullpups* for action. The missiles had been shipped from the factory in two ways: in one case, they were shipped in three sections and stored that way for speedy assembly. Other missiles had been delivered fully assembled.

The *Bullpups* can be installed on an A4D within minutes, without any prelaunch electronic checks—the only missile so treated.

Meanwhile, the strike draws nearer. Briefing officers spread their charts on the readyroom walls. Information gained from the air group's photo *Crusaders* on missions over southern Sardinia is made available to pilots of the attack planes.

F4D *Skyray* and F11F *Tiger* pilots are instructed on how they will assume their protective roles as fighters. Pilots of the two A4D squadrons are told how they will go in for the assault, simulating *Bullpup* and rocket runs on assigned targets.

The stage is set. At zero hour the *Intrepid* stands poised at its rendezvous point 100 nautical miles due east of the beach, its bow pointing into the icy winds that blow down from the continent (for this is winter of 1960-61). A nod from Primary Flying Control, and all is ready. Speakers blare out, "Pilots Man Your Planes!"

While their counterparts aboard *Saratoga* and *Independence* will naturally disagree, catapult crews of the *Intrepid* will give you even money they can launch aircraft faster than similar crews on other carriers. The ranking admiral in the Mediterranean, Adm. Charles R. "Cat" Brown is sure of one thing: the Sixth Fleet can launch more modern aircraft now than ever before—and with firepower second to none.

Jets scream skyward from the *Intrepid's* deck and the exercise is underway, another in a continuous series that keeps the Fleet on the alert.

In a week or so there will be another exercise, and then still another, and another. Exercises will continue so long as the Fleet remains committed to the defense of Europe.

Ships may change as some are rotated back to the States and others take their places, but training continues throughout the year on the million-square-mile inland sea. Plans and tactics developed in Washington and at NATO headquarters are put to the ultimate test of operations.

Except for occasional liberty, the ships remain "at sea" during their Mediterranean duty, replenishing from supply ships at three-to-five week intervals. Thus they maintain the easy mobility so vital for defense against lightning enemy strikes, and for counter-attack.

The alert is always on. *Intrepid* and her sister ships will be ready to do their jobs when the bell rings.

Captain Keeps His Hand In
Versatile C.O. Flies Three Types

Capt. Joseph G. Smith, Commanding Officer of NAS POINT MUGU, not only preaches versatility, he practices it.

On a recent day the Captain hit Mach 1.81 in an F8U-2N, piloted an HUP helicopter for 45 minutes, hauled a load of freight and passengers to offshore San Nicholas Island in the venerable twin-engine R4D transport, and even found time for his duties as chief administrator of the station and chief host to visiting VIP's.

Capt. Smith has had a varied back-

CAPT. SMITH MOUNTS CRUSADER AT MUGU

ground. He resigned an Army commission in 1938 to enter the Navy as an Aviation Cadet. In WW II he was awarded the Navy Cross for a bomb hit on a Japanese carrier in the Battle of the Coral Sea. He has commanded four squadrons.

Capt. Smith also graduated from England's Empire Test Pilots' School, has had two tours at the Naval Air Test Center at Patuxent River and served as Head, Fighter Design, BUAER.

New Missile Contract Let
Bendix Corp. to Develop 'Typhon'

Bendix Corporation has been chosen as contractor to develop the long range *Typhon* shipboard missile system. The weapon system will consist of shipboard control units, a radar, launching system, and missiles.

Typhon is expected to give the Fleet greatly improved anti-air warfare capability, plus offensive capability against surface units.

The system should greatly extend the range and improve the accuracy, target handling capacity, and quick reaction capability of missile ships.

NEW JG'S BEGIN PENSACOLA TRAINING

FORMER CHIEFS HEAR CAPT. J.G. HEDRICK DELIVER ADDRESS AT PRE-FLIGHT SCHOOL

SIXTY-FOUR new lieutenants, junior grade, representing more than 1400 years of technical experience, were commissioned at the Navy Pre-Flight School in Pensacola in May.

They were spot-promoted from chief petty officer to lieutenant (junior grade) under the integration program which began last year as a means of keeping outstanding men in service who otherwise would enter the Fleet Reserve.

Average age of the new JG's is 41. Average time in service is 22 years. When physical training classes similar to those given pre-flight students began, one ex-chief was quoted as saying: "We're using muscles we didn't know we had left."

In addition to Naval Leadership, other courses in their eight weeks of training include Naval Orientation, Study Skills, Foundations of National Powers, Navigation, Aerodynamics, and Engineering.

Upon completion of the course at Pensacola, the officers will be assigned to aircraft carriers, fighter, attack and patrol squadrons, air stations, and staff assignments.

A Pre-Flight School spokesman predicted that they all will be readily accepted by commanding officers because they will come equipped with aviation knowledge and experience rarely found in new officers. They will be welcome aboard aircraft carriers, fighter squadrons, attack and patrol squadrons and at naval air stations. The new JG's will be eligible for promotion again in July 1963.

When recommended by their commanding officers for commissions, many of the group were eligible for, or were approaching eligibility for, transfer to the Fleet Reserve. Many had attractive civilian positions waiting, but chose to remain in the Navy.

MATS Alters Baggage Size
Limits Now Permit 'AWOL' Bags

Size limitations for cabin baggage on Military Air Transport Service flights in the Pacific area have been increased to 12x12x9 inches. Announcement of the change was made by LCol. Robert C. Dubose, Chief of Traffic for MATS' 1503d Air Transport Wing at Tachikawa Air Base.

Old limitations were changed to permit passengers to carry "AWOL" bags and ladies vanity cases in the cabin during flight.

Marines Cop 2 Navy "E's"
In Arizona Air Gunnery Exercises

Ten F4D *Skyray* pilots of Marine All-Weather Fighter Squadron 513 qualified for Navy "E" awards in competitive gunnery exercises at MCAAS YUMA, two of the ten qualifying in two phases.

The El Toro-based squadron won the awards while deployed to Yuma, competing with both Navy and Marine pilots and aircraft.

Areas of competition in which 513 pilots jousted included air-to-ground and air-to-air rocketry, air-to-air *Sidewinder* missile firing using a hooded radar, and air-to-ground strafing.

Squadron officials tag this part of the deployment "very successful."

FLYING BRAIN TRUST DELIVERS THE GOODS

AT CHINA LAKE, A4D-2N FLIES WITH VX-5-DEVELOPED MULTIPLE CARRIAGE BOMB RACK

ANYONE driving at the junction of highways U.S. 6 and U.S. 395 at the foot of the Sierra Nevada mountains can see a Navy jet bomber as it streaks low across the desert, scraping its belly on cactus and Joshua trees, then pulls up toward the stars and lets go a dummy bomb. It's VX-5 working out a new project for national defense.

The Navy will take advantage of every cent in every bombing dollar if Air Development Squadron Five has anything to do about it. Each aircraft tactic in use by the Fleet today had its beginning somewhere. It is this beginning that keeps VX-5 and her project pilots in business.

VX-5's job is "to develop and evaluate aircraft tactics, techniques, and procedures for the delivery of airborne nuclear and conventional weapons." This "flying brain trust" of China Lake is charged with getting the "mostest" out of Navy weapons delivery. This means using bomb delivery tactics that make the bomb pay off its utmost.

Under the operational control of Commander Operational Test and Evaluation Force (ComOpTevFor) and under the administrative control of ComNavAirPac, VX-5 is located aboard the Naval Ordnance Test Station, CHINA LAKE, Calif. Capt. K.S. Van Meter, Commanding Officer, and Cdr. C.L. Wilson, Jr., Executive Officer, carry on the test and evaluation work with a complement of 29 officers, 188 men, and 12 aircraft. Twenty-two of the 29 officers are Project Pilots, six of them holders of Masters Degrees in technical fields. Just for the record, the average Project Pilot is 32 years old, married, has a family, is a veteran of 14 years Naval service, and has approximately 2500 hours flight time.

When the Navy accepts a new weapon, the Chief of Naval Operations assigns it to ComOpTevFor to be evaluated. It is further assigned to a specific evaluation squadron for the actual evaluation, airborne attack weapons going to VX-5. When a new assignment is received, the Project Director holds a conference and designates the pilot best qualified in that area as the Project Officer. The Project Officer and his assistants plan a program for evaluating the delivery methods and submit it to ComOpTevFor to approve. When the program is approved, it is further developed into a series of tests. A detailed flight pattern is designed, defining all aspects of the flight before it ever gets airborne. Next comes the flying to determine how the plan actually works.

Charlie Range, a highly instrumented 15-mile bombing freeway for attack airplanes, is their prime target. In 1951 VX-5 hailed from NAS MOFFETT FIELD, from whence they flew 280 miles to China Lake to use Charlie Range. After five years they liked the facilities so much, they just moved in and stayed. Charlie Range can record flight tactics with motion picture, radar, visual tracking, the "sky screen," and by photoelectric cells located at surveyed intervals. It has been so successful that its pattern and instrumentation scheme have been duplicated in many areas by the Navy, Marines, Air Force, and some foreign military organizations.

Almost all projects for the evaluation of new weapons and for the development of tactics for their delivery are conducted in at least three phases: (1) a Strike Tactics Phase during which cruise control data, including air refueling, are collected; (2) a Final Delivery Phase during which final delivery tactics are developed and (3) a Training Phase during which training tactics are developed for fleet squadron training.

VX-5 PROJECT PILOTS HOLD PLANNING MEET

A large number of flights may be required and usually are, for any particular project. Once sufficient profile runs have been made using practice bombs, proof drops are conducted. The practice shapes used for proof drops are exact duplicates of the actual weapon except for the warhead and associated fusing. The data collected must be analyzed and reports prepared. If analysis of the data reveals the desired information, it can then be published in handbooks or revisions to existing documents. It is in this form that operational data are sent out to the Fleet.

This is the ideal pattern. Rarely is a program run to completion without

CDR. R.E. KUNTZ (ON TELEPHONE) IS VX-5'S PROJECT DIRECTOR

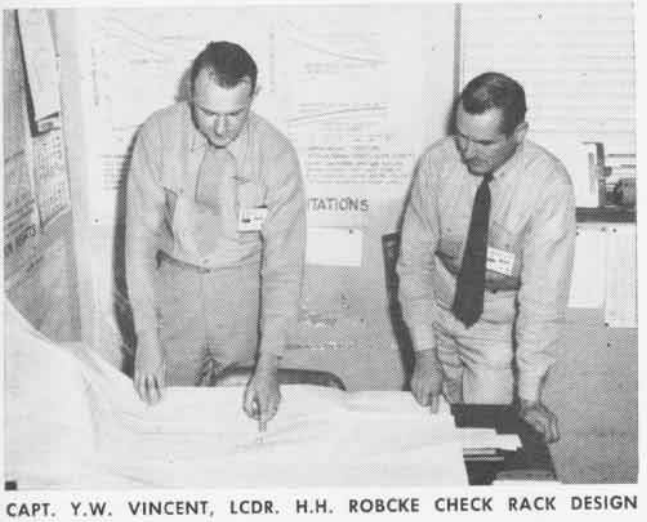
CAPT. VAN METER GETS FIRST HAND REPORT FROM LT. G.E. LEBLANC

back-tracks and repeats as new information is fed into the process. The great requirement throughout is that the final delivery must be simple to perform, highly repeatable and that it require a minimum of maneuvers. Should it fall short and require extensive training to be understood and performed, it will be of little value to the Fleet.

While primarily concerned with developing new weapons delivery flight tactics, the VX-5 gang cooks up a bonus for the taxpayers on occasion. A significant new idea was the recent Multiple Carriage Bomb Rack (MCBR) which increases the bomb-carrying firepower of an attack plane 600%. The plane now carries six bombs for every one carried previously. VX-5 conceived and developed the design, and the Navy liked it so well they decided to use it widely. As a consequence Douglas Aircraft was awarded a large contract to produce the MCBR.

There is more to a day's work than so many flights or project reports. It goes further than training others to perform the tactics, or coming up with a new piece of hardware to carry more firepower. The job is to determine how to deliver maximum destruction to the designated target and at the same time, maintain maximum safety for the pilot and his aircraft. Next, tactics must be designed and developed to accomplish this. This is the role played by VX-5 in increasing the effectiveness of Naval Air Power.

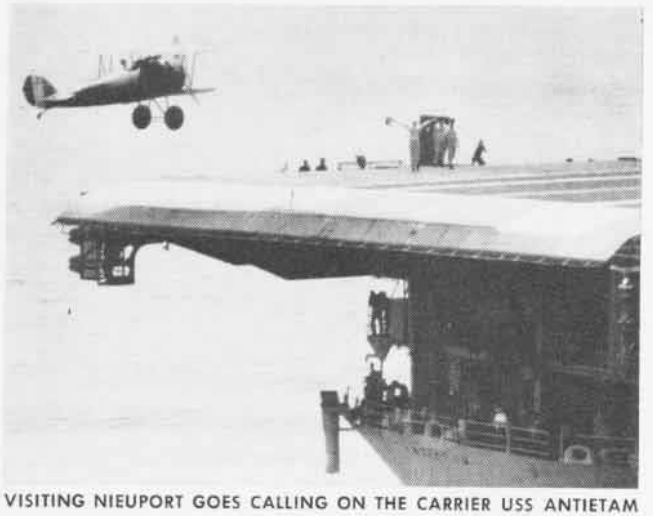
These airborne idea-men combine a little of the old daredevil, barnstorming, seat-of-the-pants type flying with the most modern instrumentation. They're individualists who work as a team; pioneers and inventors who work a "customer acceptance" routine for the Fleet. They're an essential part of the Navy's attack team that will fly from highly mobile landing fields, the seagoing aircraft carriers, to keep any threatening enemy from your door.



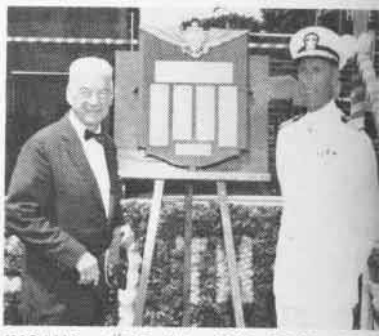
CAPT. Y.W. VINCENT, LCDR. H.H. ROBCKE CHECK RACK DESIGN

AN FJ-4, JUST RECEIVED, GETS FULL INVENTORY AND INSPECTION

THE BIG



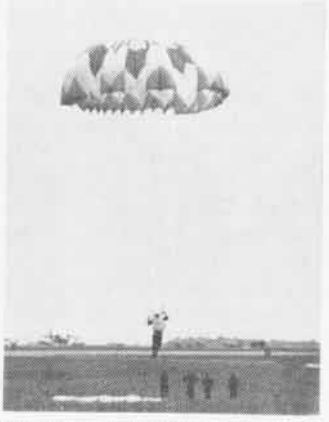
VISITING NIEUPORT GOES CALLING ON THE CARRIER USS ANTIETAM



INGALLS, #85 (L), AND CAPT. DELON

From 50 states and overseas, Naval A
memory-drenched clime of Pensacola,
it and for thousands who did, these sc
reunion. Presentation of Wings by th
a 50-year gap of history and was for n
show, the dinners, the fish fry, the pa
Fiesta of Five Flags with Naval Aviator

NAVAV #52, C. P. MASON, BESTOWS WINGS ON GRAD



CHUTING STAR GREENUP, DROPS IN ON SHOW

ELLYSON'S AND SHEPARD'S FLYING MACHINES GRACED 50TH FLOAT

SENTIMENT, A PERFECT DAY AND ELITE EXHIBITION TEAMS

REUNION

REP. SIKES PRESENTS PLAQUE TO DCNO(AIR)

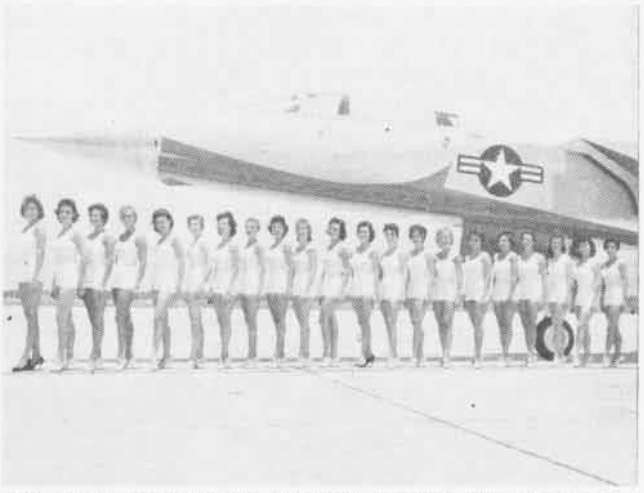
ion rendezvoused in its 50th year in the ida. For thousands who couldn't make show some highlights of the week-long est to the newest Naval Aviators closed the high point. For others it was the air the chance to meet old friends, or the 52 in the role of Don Tristan de Luna XII.

ADMIRAL BELLINGER, #8, TAKES A TURN AT A FAMILIAR WHEEL

NUMBER 8 PINS WINGS ON NEWEST NAVAL AVIATOR

FAST LOW LEVEL EJECTION DEMONSTRATED

EE NATIONS DREW THOUSANDS TO SHOW AT SHERMAN FIELD



A3J BACKS MISS FIFTIETH FINALISTS; WINNER 7TH FROM RIGHT

50 Years of Naval Aircraft

PATROL PLANES—WW II ON

LOCKHEED P3V-1 *Orions*, powered with Allison T-56 turboprop engines, will soon be entering squadron service to bring another big step forward in land-based patrol plane operations. This advance is characteristic of the evolution of the Navy's land-based patrol planes since the first ones entered service late in 1941. Like the *Orions*, these were also Lockheeds. Twenty *Hudsons* were acquired from a British allocation and given the Navy designation, PBO-1.

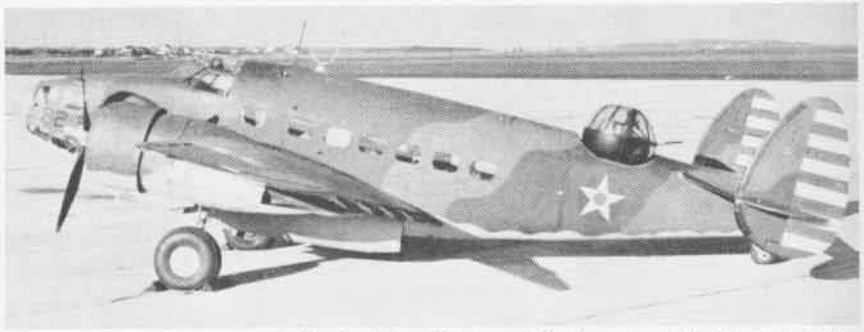
Until this time, the Navy's patrol planes were all seaplanes. As patrol operations expanded with the war in Europe, some of the limitations of the flying boat were evident, particularly for far northern operations in the wintertime. A prototype amphibious version had been ordered of the PBY, the standard flying boat of the period. Production orders followed, but to provide immediate land-based capability, the PBO-1's were put in service. The *Hudsons* had been developed from the Lockheed 14, a commercial twin-engine transport, to provide the British with a land-based, general reconnaissance plane, principally for sea patrol.

Pearl Harbor occurred shortly after delivery of the PBO's. Production of existing flying boats and of the amphibian PBY-5A was continued. Development of new seaplanes also proceeded. The new types included the Boeing XPBB-1 and Consolidated XP4Y-1 twin-engine flying boats and the much larger four-engined Martin XPB2M-1 Mars and Consolidated XPB3Y-1. The last was in the early design stage; the other types were further along. The XP4Y-1 had been modified from what was initially planned as a commercial transport design.

Requirements for greater speed and range in patrol and anti-submarine operations emphasized the need for increased capability in VP operations.

By the summer of 1942, the decision had been made that land-based VP types could, in many cases, do the job more effectively than flying boats. Three types of Army Air Force bombers became Navy types in return for transfer of Navy production facilities to the Army bomber program.

The twin-engine Vega (Lockheed) B-34 *Ventura* and North American B-25 *Mitchell* became the Navy's PV



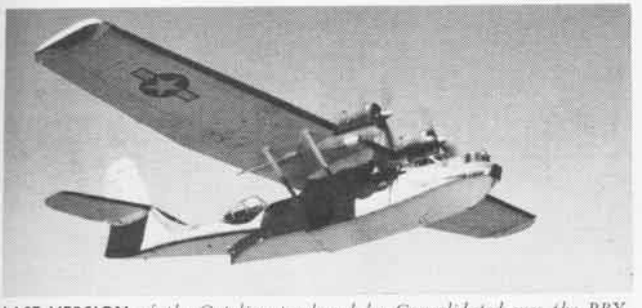
LOCKHEED PBO-1 HUDSON, *the first landplane Navy patrol bomber, was originally developed for the British. A few served Navy, beginning in late 1941. Engines were two 1200-hp Cyclones.*

PROTOTYPE MARS *was Martin XPB2M-1 which flew before our entry into WW II. It was powered by four 2000-hp Wright R-3350 engines.*

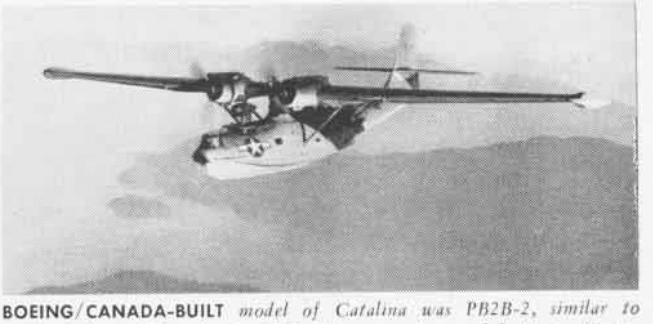
CONSOLIDATED XPB2Y-3 *Coronado, powered by four 1200-horsepower Twin Wasps, was generally typical of 6 models of this flying boat design.*

EXPERIMENTAL FLYING BOAT *was early WW II Consolidated XP4Y-1, modified from twin-engine commercial type. Engines were R-3350's.*

NAVY BUILT PBN-1 *Nomads, based on the PBY, with modified hull. Revised tail surfaces were developed and later incorporated in all PBN's.*



LAST VERSION *of the Catalina produced by Consolidated was the PBY-6A amphibian, incorporating the PBN type tail, new radio and radar.*



BOEING/CANADA-BUILT *model of Catalina was PB2B-2, similar to PBY-6A but a flying boat. All Catalinas were powered by Twin Wasps.*

and PBJ respectively. And the four-engined Consolidated B-24 *Liberator* was designated the PB4Y-1. Modifications were made to equipment and armament, and radar was incorporated.

Venturas and *Liberators* soon entered service, primarily with Navy Fleet Air Wings, and *Mitchells* were used by Marine squadrons. Together with the flying boats and amphibious *Catalinas*, these land-based patrol planes performed anti-submarine operations, long-range bombing, and recon missions in all theaters of war.

None of the advanced flying boats reached production as patrol planes. Only the *Mars* entered service, the prototype serving as the XPB2M-1R transport while the design was revised for production as the JRM transport.

Production and development of existing flying boats did go on. Some of the improvements in the *Catalina* design developed by the Naval Aircraft Factory for their version, the PBN-1 *Nomad*, were incorporated in the later versions of the *Catalina* produced by Convair (PBY-6A) and Boeing/Canada (PB2B-2). Installation of larger power plants and other improvements were made and evaluated in the PB2Y *Coronados* and PBM *Mariners*. Only the latter, as the PBM-5, went into production. As improved radar equipment was developed, it was installed in the different patrol types. Many PB2Y's were modified and diverted to VR operations. Modified versions of the other VP types were also used as transports.

All the land-based types were found to have some drawbacks as patrol planes, and, by mid-1943, programs were initiated to provide modified versions of the PB4Y and PV, resulting in the PB4Y-2 *Privateer* and PV-2 *Harpoon*. Both featured increased crew space, better arranged for VP duties, and modifications to give better long-range performance at lower altitudes. The PB4Y-2 incorporated six power-operated turrets, each with two .50 calibre guns. The *Harpoon* emphasized forward-firing armament and wing store stations for low-level attack missions. Electronic counter-measures gear also made its appearance in service.

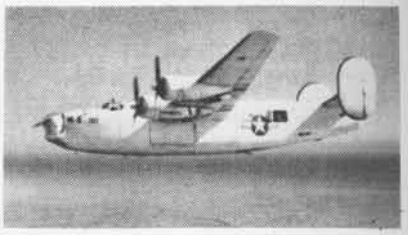
Development of new land-based VP types was initiated together with these programs: the Lockheed XP2V-1 *Neptune* and Martin XP4M-1 *Mercator*. The first was powered with Wright R-3350's while the *Mercator* combined piston engine and jet power plants. Experience with other WW II types, as well as technical advances in all areas, played a part in their design.

Throughout the war years, hydrodynamic research had been actively pursued and the next two new VP designs, the XP5M-1 and XP5Y-1, were based on the results of this work.

The XP5M-1 was modified from the

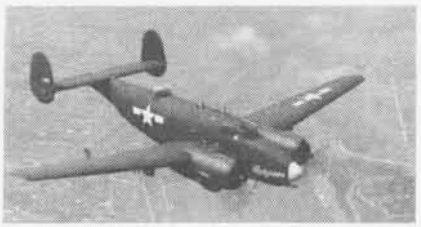
NAVY VERSION *of B-25 Mitchell, NAA PBJ-1, featured ten .50 calibre guns and a radome.*

MARINES USED *Vega PV-1 Ventura as night fighters; others were Navy patrol bombers.*



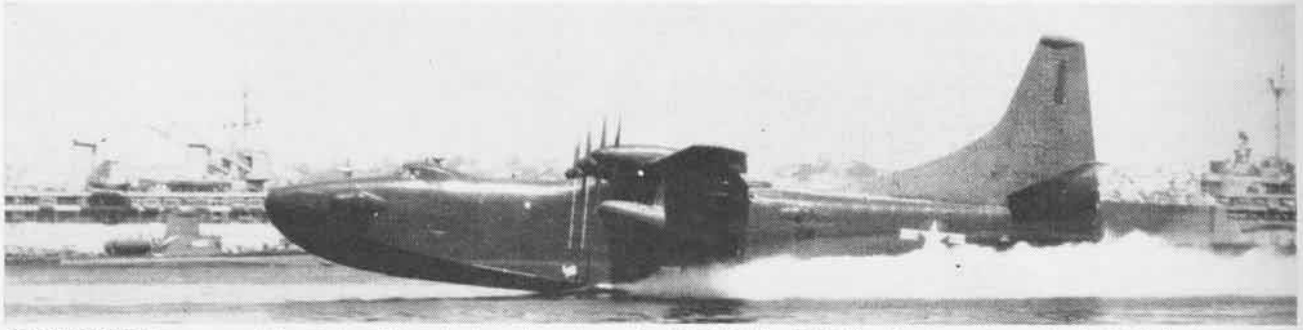
CONSOLIDATED PB4Y-1 *Liberators, B-24's with modified gear, patrolled Atlantic, Pacific.*

PRIVATEERS, *Consolidated PB4Y-2's served in late WW II; and in Korea as P4Y-2's.*

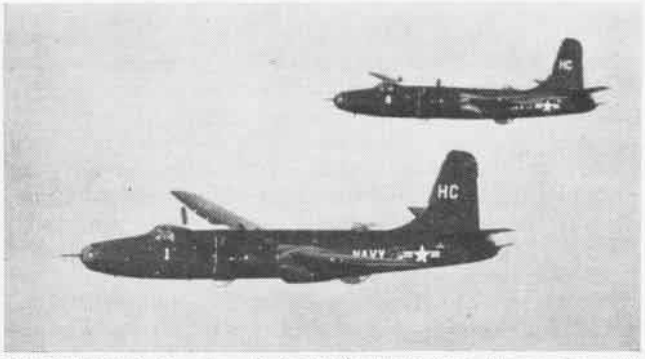


LOCKHEED PV-2 *Harpoons were revised PV-1's in which wing and tail areas were increased.*

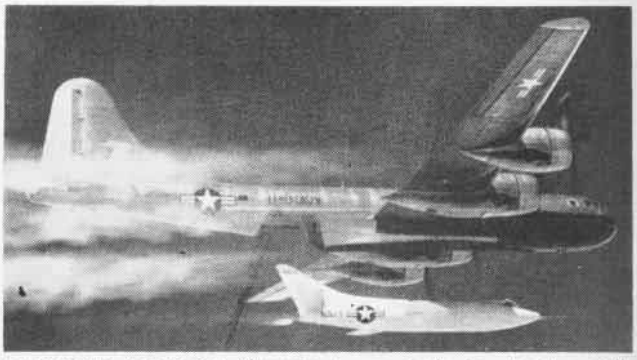
PBM MARINERS *served in WW II; a number of PBM-5A amphibians were delivered after war.*



CONVAIR XP5-1 *was one of the most ambitious projects being pursued by the Navy after World War II. With four Allison T-40's rated at 5035 hp plus 1225 lbs. thrust, maximum speed of 360 knots was anticipated. Five turrets, each with two 20-millimeter guns, were installed.*



MARTIN P4M-1 *Mercators had 3250-hp P&W Wasp Majors plus 4600 lb. thrust Allison jets for high speed in mine laying and attack missions.*



LAUNCHING A D-558-II *Skyrocket is one of the four B-29's initially acquired by Navy as P2B's in order to evaluate them as ASW airplanes.*

FLYING FORTRESS *of WW II, most Navy B-17's were PB-1W's converted as airborne CIC and early warning airplanes with large belly radomes.*

LOCKHEED PO-1W *followed success of PB-1W's. Two of these were evaluated, leading to full scale production and service of WV-2's.*

last PBM-5, with a new longer hull design, single tail and larger engines. Convair's XP5Y-1 was a much greater advance, combining as it did, many of the technical developments of the war with four turboprop engines then being developed. Speed and climb performance, similar to that of a World War II *Corsair*, were anticipated.

Also, in the late WW II and early post-war period, additional AAF types joined the list of Navy VP types. Boeing's famed B-17's became PB-1's. Operationally, they were modified with large radomes under the belly as PB-1W's, predecessors of the prototype Lockheed PO-1W and current WV early-warning *Constellations*. Four Boeing B-29's became P2B's for evaluation as anti-submarine patrol planes. They achieved more distinction later as research and development aircraft, particularly in launching the Douglas D-588-II *Skyrocket*.

Production of the P2V *Neptunes* and P5M *Marlins* provided the principal VP types for the following years. A limited number of P4M-1's also entered service, as well as a small number of PBM-5A amphibians. Like some of its precedessors, the XP5Y-1 design was modified into a transport design, becoming the R3Y *Tradewind*.

P5M's and P2V's have been continually improved, incorporating new developments in ASW equipment. One of the biggest improvements in the P2V's has been the installation of pod-mounted jet engines to give improved performance and allow operations at heavier weights. The value of this combination of power plants had been demonstrated by the *Mercator*. Today's VP squadrons depend on the latest versions of *Neptune* and *Marlin*.

CURRENTLY, ONLY FLYING *boats in service are the Martin P5M Marlins. P5M-2 has a T tail and both models have been modified with latest ASW equipment installed. Engines are two R-3350's.*

Another project represented the biggest step forward in water-based VP design: the Martin four-jet P6M *Seamaster* program. This program overcame many hurdles before being cancelled in a period of budget-squeezing. Its mission was long-range minelaying and attack at high subsonic speeds. In many ways, this mission was closely related to that of two much earlier seaplane types, the Douglas P2D-1's and Hall XPTBH-2 of the Thirties.

In the late Fifties, advances in turboprop engines and the need for more internal space and equipment spelled out a requirement for a new land-based VP type. The commercial Lockheed *Electra* was found basically to fit the bill, and the P3V program was born—an interesting parallel to the first land-based Navy VP type of 20 years ago, which had originated from the Lockheed 14 transport.

Conversion of one of the early production transports into the YP3V-1, with the fuselage shortened and latest ASW avionics systems installed, has accelerated the P3V-1 development program. Initial production *Orions* with increased strength for maneuvering and full ASW-weapon-carrying capability have followed. With increased speed over long ranges, P3V-1's will add significantly to VP squadron ASW capability in the years ahead.

MARTIN P6M-2 *was to be Seamaster production version, powered by four P&W J-75 jets, capable of high speed bombing and mining missions.*

LOCKHEED P2V-7 *Neptune is mainstay of VP squadrons' current ASW capability. Armament of earlier models is gone; latest ASW gear installed.*

Weekend Warrior NEWS

COLOR PRINTS *from USS Kitty Hawk lab are admired by Arthur Laroche, PHC. Blank, Castiglia and Chmielewski (left to right) helped put lab in operation in two-week active duty stint.*

Color Photo Lab in Kitty Hawk

Three Naval Air Reservists on two weeks active duty for training have set up a "first of its kind" experimental color photo lab in the USS *Kitty Hawk*.

It started when Arthur Laroche, PHC, of the carrier was recently directed by his commanding officer to set up this type of a lab. Since he had no previous color lab experience, he was not only faced with the problem of setting up operations, but also of training his staff of photographers. Unlike black and white photography, color presents many special problems and pitfalls, with accompanying headaches to the inexperienced.

Laroche sought out the most experienced man in this field in the Philadelphia area, John Castiglia, president of Casacolor Laboratories, Inc., of Woodlyn, N.J.

Discussing his needs and requirements, Laroche learned that Castiglia had acquired his color photography knowledge as a former Navyman. His knowledge he now used as a civilian.

"I'm a PH1 in one of the reserve units at NAS WILLOW GROVE," Castiglia offered, "and I'd be happy to offer my services free of charge for doing this job if the necessary arrangements can be made to order me to temporary duty with pay for two weeks aboard the *Kitty Hawk*."

In quick time, the orders were written and issued to Castiglia, as well as to two of his squadron shipmates at Willow Grove, Henry Blank, PH1, an instrument technician in civilian life, and Stanley Chmielewski, PH1, now a photographer for an industrial firm.

Within five hours after reporting aboard, the three reserve photographers had the first color print made in the carrier's photo lab and in the hands of the ship's photo officer.

After initial processing, a steady stream of photos and prints were developed and training aids were produced. Test negatives and prints were used, allowing the regular crew to assume command of the operation.

Old Pipes for Bo'sun

When he retired recently at NAS LOS ALAMITOS, "Easy" Moskwa, BM1, presented a 51-year-old boatswain's pipe to Edward Radman, BM1. The pipe, handed down for half a century by retiring boatswain's mates, is now in the hands of its fourth owner.

Originally acquired in 1909, the pipe has been from one side of the world to another, from one coast of continental U.S. to the other.

Moskwa received the pipe in 1951. Traditionally, each retiring possessor hands it down to a boatswain's mate of his choice still on active duty.

Squadrons Reunited

Twin-sister patrol squadrons were temporarily reunited when Reserve VP-742 commenced its annual two-week active duty cruise with the *Eagles* of Patrol Squadron 16.

Close relationship of the two anti-submarine squadrons dates back to February 1953. At that time, personnel from VP-741, returning from a year's active duty in connection with the Korean conflict, were released to inactive duty to form VP-742. The mother organization was commissioned a squadron in the regular Navy and was redesignated VP-16. Nine of the

IN UNUSUAL REUNION, *VP-742's Cdr. Green checks flight with VP-16's Lt. W. D. Little.*

'SAFETY' *grins beam from Atlanta's LCdr. W. E. Conrad, Cdr., R. F. Lewellyn, Cdr. R. H. Benson, Capt. L.J. Schwartz, LCdr. P.H. Kellogg.*

FOUR RESERVE CAPTAINS *teach in Boston Schools System. From left, Captains O'Donnell, Forsell, Barry, Superintendent Gillis, and Roche.*

original "741" members are still serving with VP-742.

Commanded by Cdr. F. D. Murphy, the Weekend Warriors of VP-742 were under operational control of Commander Fleet Air Wing 11 during their two-week cruise and performed all tasks normally assigned an active anti-submarine squadron.

Winner Views Trophy

At NAS GLENVIEW for a week's conference, Capt. Guy B. Catterton recently viewed the Noel Davis Trophy won four times by VS-872, two times while he was in command. The trophy is permanently on display there.

Safety in Numbers

As the fiscal year ended, officials at NAS ATLANTA totaled up the number of accident-free flying hours achieved at the station and discovered that 50,012 safe flying hours had been logged. There was just pride in the accomplishment. During the period, there were no accidents and no injuries.

Eighty-five per cent of these flight hours were flown by members of the station's Weekend Warrior squadrons. Active duty Navy and Marine pilots attached to the station accounted for the remainder.

Seven different types of aircraft, ranging from single-seaters to complex anti-submarine patrol planes with 11-man crews, were flown in the recorded period.

Capt. I.J. Schwartz, commanding NAS ATLANTA, attributed the safety record to conscientious efforts on the part of aviators, maintenance men, plane captains, ground handling crews and parachute riggers.

TWO-TIME *Noel Davis Award Winner, Capt. Guy B. Catterton, points to winning years.*

New Air Divisions Opened

Navy veterans of Naval Aviation ratings who have been unable to participate as Weekend Warriors in the Naval Air Reserve program because of distance or time involved in getting to Reserve Air Stations now have four additional opportunities.

RAdm. A. W. McKechnie, Chief of Naval Air Reserve Training, has announced the opening of four NARDivs at Birmingham, Buffalo, Cincinnati, and Houston Reserve Training Centers.

Each trainee will receive 48 drills a year, plus 14 days active duty. Enlisted personnel will normally accomplish their active duty aboard aviation ships. Emphasis will be placed on the technical knowledge and skills necessary to satisfy professional examination requirements.

Eight additional units will be commissioned in the future to meet the present planned program for 12 Naval Air Reserve Training Divisions at stations throughout the country.

Captains in Boston Schools

Four Naval Reserve Captains were on the roster of the Boston School System at the closing of the 1960-61 school year.

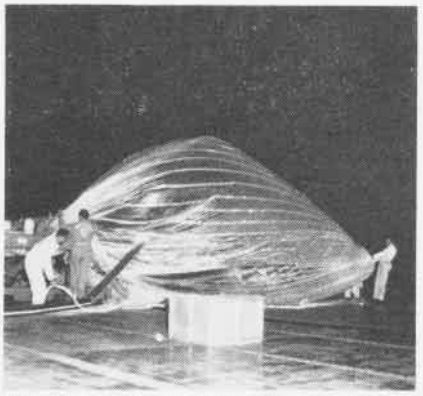
The latest to earn his fourth stripe is Herbert F. Forsell of Air Wing Staff 91, attached to NAS SOUTH WEYMOUTH. At that time he was congratulated by Dr. Frederick J. Gillis, Superintendent of the Boston Public Schools. On hand during the brief meeting and offering their felicitations were Capt. F. O'Donnell, Principal of Bigelow School, South Boston; Capt. Edmund H. Barry, Principal of Grover Cleveland High School; and Capt. Thomas A. Roche, director of Industrial Arts and Vocational Education.

The alert photographer who snapped the picture published at the top of this page jumped on the news story before Capt. Forsell added his stripe.

Dinkins Does It

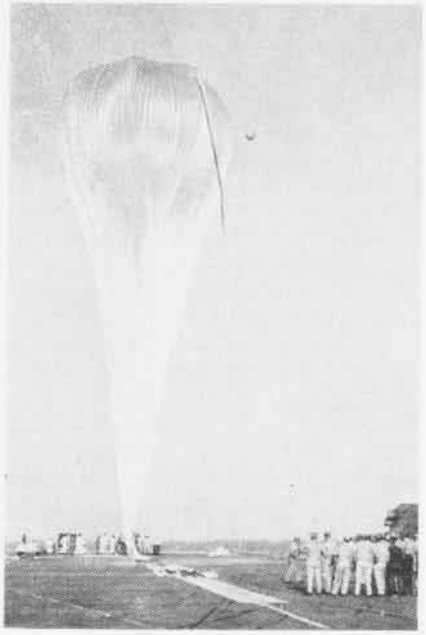
Casey O. Dinkins, ADJC, of VR-742 has completed 15 years of duty as a Reserve Weekend Warrior without missing a single drill or squadron cruise. In civilian life, he's Supervisor of Machinery Aircraft Parts at Overhaul and Repair, NAS JACKSONVILLE.

USS ANTIETAM IN RESEARCH ROLE



WORKERS INFLATE BALLOON ON CVS-36

BALLOON IS FED THROUGH ROLLERS ON DECK



AT SUNRISE, A TEST BALLOON IS RELEASED

By Dan Kozemchak, JOC

A NEW RECORD was set and an important new technique demonstrated with the launching of the world's largest manned balloon from the deck of the USS *Antietam*. It resulted in an altitude record of 113,733 feet.

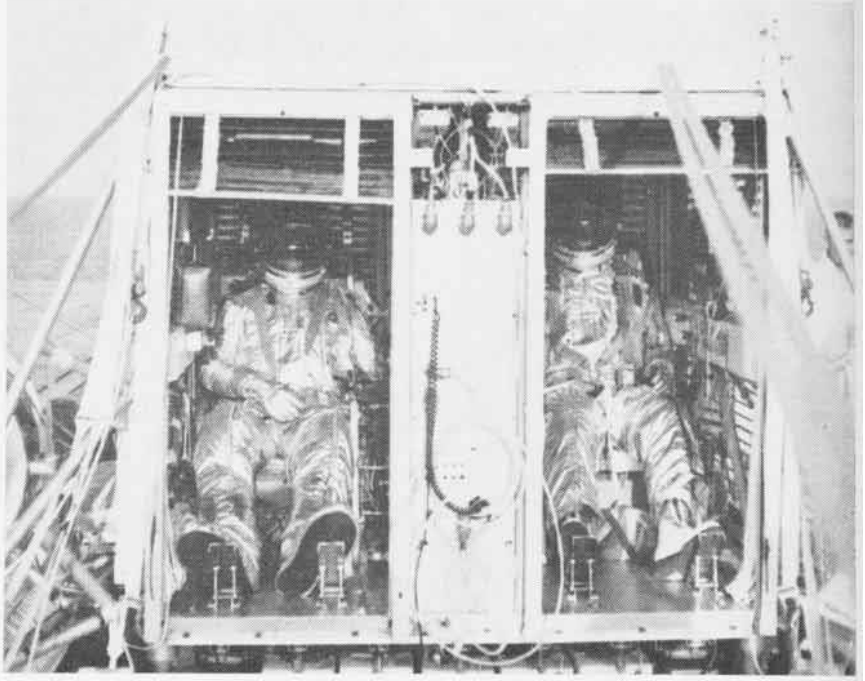
The flight itself was highly successful, largely due to the planning and skill of the ship's personnel involved. Unfortunately, tragedy during the recovery of the balloon's crew marred what would have been an otherwise perfect operation. One of the two passengers of the flight, LCdr. Victor A. Prather, MC, was fatally injured while being transferred from the floating gondola to the recovery helicopter.

The morning of 3 May was the start of a routine operating day for the crew of the *Antietam*, qualifying student pilots in carrier landings. But on the hangar deck, in flag plot and other assigned spaces aboard, doctors, technicians, and experts in atmospheric and stratospheric research concentrated on the final details of the balloon launching, given the name Strato-Lab No. 5. During it, two men, Dr. Prather and pilot Cdr. Malcolm D. Ross, would collect and record scientific data on the upper atmosphere and stratosphere as part of a continuing program conducted by the Office of Naval Research.

Nearly a month earlier, an unmanned balloon was launched from the *Antietam* to determine the suitability of the aluminum-constructed gondola. And, nearly a week before the record ascent, Ross and Prather made a dry run to an altitude of 8000 feet. As they emerged from this shorter flight, they became the first to make a carrier landing in a manned balloon.

As the ship completed her flight operations and set a westerly course in the Gulf of Mexico, meteorology officers kept a close vigil on weather conditions both at sea level and at many thousands of feet in the atmosphere.

In the early evening, the wardroom became a conference room where various groups assembled for final discussions. Cdr. J. W. Sparkman, Jr., project officer for Strato-Lab No. 5, talked with Ross and Prather on final details of the flight. Newsmen, invited aboard for the event, were briefed and later interviewed the two balloonists. Men from Winzen Research, Inc., makers of the 411-foot polyethylene balloon



PRATHER AND ROSS AWAIT FINAL HOOK-UP. BLINDS WERE DRAWN AFTER THIS PHOTO

and aluminum gondola, huddled to review and re-examine their equipment.

During this period, reports on the weather outlook were received continuously; this now became the deciding factor on whether or not the balloon would be launched at the predetermined time. Both Ross and Prather retired from the wardroom, followed by other members of the group who had only to await the decision for launching. The waiting game continued until 2330, ending with the announcement that the balloon would be launched at approximately 0630 the following morning.

ANTIETAM's flight deck was illuminated for the preliminary set-up of equipment. The Winzen Research men were to prepare the seven-acre, one-ton balloon for inflation and they began this job at 0330. The carrier changed its course to obtain zero wind across the flight deck before the balloon was brought on deck. From that moment on, Operations Officer Cdr. R. K. Brown approached the complex ship-handling problems skillfully anticipating and solving them as they arose.

The ship's aircraft crash crane, commonly called "the tilly," moved into position to anchor the base of the balloon. With conditions now "perfect," the balloon was neatly unrolled on the flight deck. A special launching platform with rollers was placed forward of the balloon; thus the balloon would be fed through rollers during inflation operations. The tilly, holding a strain on the balloon, crept forward as gas was supplied.

The forward elevator was brought into use, hauling the specially designed gondola on deck. Measuring six feet by five by five, it had silver and black venetian blinds to control light and heat during the flight. Hoses were connected to the helium tanks on the hangar deck like giant worms and were snaked up to the flight deck.

While these preparations were being made, Ross and Prather rested in their air-conditioned staterooms. Electronic recording devices and communication equipment to be used during the flight, filling flag plot, were thoroughly checked out. All phases—from the lacings on the shoes of the *Mercury* astronaut space suits to the intake connections on the balloon—were carefully inspected to insure readiness.

LIKE A GIANT EXCLAMATION POINT, THE BALLOON PUNCTUATES ANTIETAM'S BOW

On deck, with deliberation, the technicians continued inflating the balloon until the proper amount of helium was hosed into the balloon envelope. At approximately 0500, the inflation tubes were firmly secured. Less than half of the balloon had been fed through the rollers. It stood almost motionless, awaiting final hook-up with parachute and gondola.

In the Chief of Staff's in-port cabin, Ross and Prather were completing physical examinations, which included X-rays and a series of blood tests.

Suiting-up took nearly as much time as the lay-out and inflation of the balloon. The balloonists' bodies were instrumented for telemetering a variety of medical data. The wires transmitted data on pulse, respiration, body temperature, and other scientific facts desired.

For warmth, both men wore a new experimental underwear woven of fibre made from peanut shells. Astronaut suits, with minor modification, were put on next. And over this 25 pounds of clothing, they wore a four-ply outer break-away garment which could be removed quickly, if circumstances should require it. The space suit and outer garment were aluminized to reflect heat.

Wind across the flight deck was maintained at zero throughout the early morning hours. The balloon, at almost full height over the deck, showed only a slight movement as it strained to be released from the ship.

Shortly after sunrise, Prather and Ross came on deck and manned the gondola. After preliminary adjustments were made to their equipment and while technicians were making connections with men and gondola, the parachute was attached to the lower end of the balloon. The two men also made a final check of radio equipment and oxygen supply and then adjusted the mirrors located in the gondola. The mirrors permitted them to view each other in flight and to obtain various sighting angles.

A voice over the flight deck announcing system ordered all personnel, except those directly connected with the actual launching, to clear the area. The balloon, parachute and gondola were now one unit and ready for launching.

Then a charge was set off, freeing the gondola from the flight deck. As it rose rapidly above the deck of the ship, there was a slight rotation of the gondola. The balloon headed on a predicted southeasterly course, rising at 1200 feet a minute.

The *Antietam* made a slow turn to starboard, put all her boilers in operation, and started her tracking course. At approximately 10,000 feet, a WV-2 aircraft circled the launching area as it had been since early morning. As the balloon rose, the plane began receiving information from the men in the gondola and transmitting it to monitors in the *Antietam*. A land-based trailer at NAS PENSACOLA also recorded scientific data during flight.

Word from the men in the gondola

indicated that everything was going well. But there were a few moments of anxiety when voice communication was lost with the ship. This was restored immediately.

In the ensuing hours, personnel aboard the *Antietam* were informed of the balloon's current altitude. After spending weeks with preliminary tests, the crew felt that this had become an *Antietam* project as well as a project of the Office of Naval Research. A few hours after the launching, an announcement was made. The balloon had surpassed the existing altitude record of 102,800 feet established in August last year by Capt. Joe Kittinger, USAF—and it was still climbing. A few minutes later, the balloon reached its peak of 113,733 feet. Ross and Prather reported their amount of breathing oxygen remaining. As they began their descent, they continued these reports.

Back in the *Antietam*, scientists calculated the rate of descent of the balloon and determined it was too slow, that the men aboard would exhaust their supply of oxygen before reaching "safe" breathing atmosphere. They ordered the pilot to speed his descent.

Originally, plans were to recover the gondola and men on the deck of the *Antietam*. But the rapid speed of descent made it advisable to jettison the drag-line recovery gear in order to lighten the weight of the gondola and slow the balloon down. This was done and the men prepared to ditch. Three helicopters were standing by, one already in the air.

When the balloon finally reached the water, it settled gently into the Gulf of Mexico about two miles off the port bow of the carrier and approximately 150 miles south southwest of Pensacola.

Although deeply saddened by the death of his partner during the recovery operation, and weary from the long flight, Ross agreed to a press conference later that evening. He described what he saw as he climbed to 113,733 feet above the earth:

"Looking south, about 400 miles on the horizon," he said, "we could see a whitish blue sky which represented the troposphere, a band of darker blue, a clear separation, and a darker blue above that, to a very dark deep blue. . . . It was lovely!

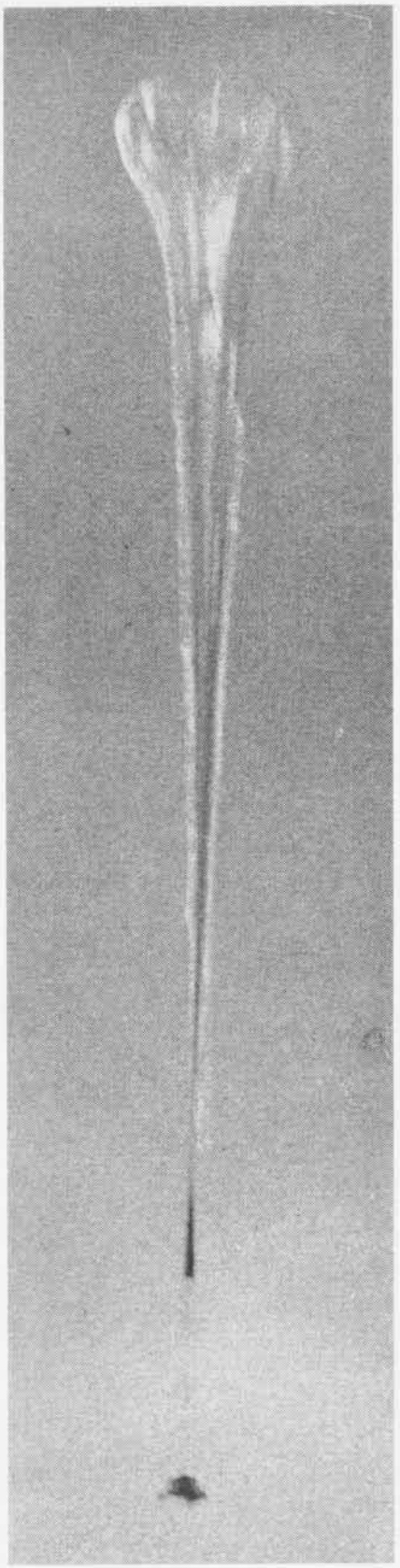
"We saw clouds you couldn't see (from the earth's surface). To one side, I saw clear across Florida. . . . I had a real good look at the Gulf states and could see New Orleans and the entire Gulf coastline."

He indicated they had only minor discomfort during the flight, that it had become chilly in the stratosphere. The specially designed clothing, he said, protected them from extreme cold, recorded once at −67° C.

With the successful completion of the flight, Chief of Naval Research, Rear Admiral L. D. Coates, commended Commanding Officer of the *Antietam*, Capt. Paul E. Hartmann, and men on the carrier for their "outstanding cooperation and assistance rendered during the . . . flights. It is noted," he continued, " that the successful accomplishments of the flights were largely dependent upon the excellent ship-handling skill displayed by the Commanding Officer."

He then commented on the carrier's role in balloon launchings. "The complete scientific success of these flights has made a definite contribution by establishing the feasibility of carrier launch of large manned balloons.

"Carrier launch appears to be significantly superior to land launch by virtue of the carrier's capability to produce zero relative wind at the launch site and to provide mobility with respect to weather evasion and technical support facilities."



IN FULL FLIGHT, 411-FOOT BALLOON RISES

LCdr. Victor A. Prather, MC

LCdr. Prather gained fame as a Navy balloonist and space scientist. From 1943 to 1945, he attended Tufts College in the Navy's V-12 program and served as a hospital corpsman in 1945-46. He received his M.D. degree from Tufts College Medical School in 1952 and was commissioned 18 September 1954. Upon completion of the course at Navy's School of Aviation Medicine at Pensacola, he was designated a Flight Surgeon.

At the time of his death, he was serving as Assistant in Aviation Medicine at Naval Medical Research Institute, Bethesda, with additional duty in the Biophysics Division doing research in telemetering and vibration. He also worked with the Office of Naval Research in Skyhook 60.

HUNTER-KILLER GROUP ON THE PROWL

COMING OR GOING, *this formation of air-sea power that comprises Task Group 70.4 spells trouble for lurking submarines. Part of the United States Seventh Fleet, the unit pictured here embraces the carrier Bennington, the destroyers Fletcher, Carpenter, Nicholas and Sproston of DesDiv 251 and USS Braine, Cogswell, Ingersoll, Stoddard of DesDiv 212. These photographs were made in South China Sea.*

FOR SPEEDY RECOVERY, TRY TF 140

CDR. SHEPARD IS QUICKLY BROUGHT UP TO HELICOPTER DURING SMOOTH RETRIEVAL

TRUE PARTNERSHIP backs up the rapid recovery from space of America's astronauts. Large and thoroughly organized, Task Force 140 stands ready for anything foreseeable, or unexpected, in its recovery role for Project *Mercury*, and the accent is on aviation.

The facts of Cdr. Alan B. Shepard's suborbital flight, under the direction of the National Aeronautics and Space Administration, have been told far and wide. The less-known story of that first recovery of a man and his spacecraft, in which the Navy played the lead, is a tale of joint effort by many diverse interests brought together to guarantee safety in a pioneering flight venture that made history.

Shepard's was the 14th recovery in the *Mercury* series. As this story goes to press, more such space flights—and recoveries—are being readied by the U.S. team.

When the Marine helicopter eased Shepard and his spacecraft to the deck of the USS *Lake Champlain* following that flight last 5 May, many Navy hearts thrilled to the achievement, not only because of the classically "AOK" performance, but also because of what the recovery demonstrated. Uncommon headwork paid off in this act of culmination.

The Marine helicopters spotlighted aviation's place in the *Mercury* Recovery Force, or Task Force 140, but recovery relied heavily on other aircraft and airmen offstage, including P2V's in a sky-sea patrol, more choppers at Cape Canaveral, and planes of the USAF Missile Test Center and the USAF Air/Rescue Service. These all were alerted or in the air.

Shepard himself had an official, along with a personal, interest in this recovery. That was because NASA, for whom he works as an astronaut, had assigned him a special responsibility. When the civilian space agency drafted its test-pilot-astronauts from the three Services, each was given a sphere of interest, a responsibility for a part of Project *Mercury* on his own. The idea was to integrate brainpower into an effective scientific team. Shepard's area of interest became recovery.

To him, recovery means the systems, aids, procedures and checks, and the globe-girdling tracking network which is aimed to that end. To Task Force 140, recovery includes full responsibility beginning at the moment of launch; it encompasses tracking, location, retrieval and delivery of the spacecraft, anywhere from the area surrounding the launch pad and out to sea beyond the farthest point of landing.

Shepard works with the many hundreds of military and civilian members of the team known as Task Force 140. Under NASA-Defense Department agreement for support of *Mercury* by the Services, the recovery task was given to Commander, Destroyer Flotilla Four, under CinCLant, based at Norfolk, Va. Make-up of this command is a large collection of Navy skills and equipment in the air, ashore and afloat, plus the support needed from the other Services.

"If," said a pre-launch NASA news release about the 5 May *Mercury-Redstone-3* (MR-3) flight, "the flight terminates early, inadvertently, elements of the *Mercury* Recovery Forces are deployed along the intended flight path to make the recovery." And then some.

Here are items of that deployment:

- Six destroyers stationed at intervals from offshore outward some 325 miles from Cape Canaveral, along the course of the intended flight; USS *Lake Champlain* (CVS-39) positioned nearest the intended spacecraft splash point; two minesweepers and a salvage vessel a short distance off the Cape.

- Seven HUS and HRS-2S helicopters of Marine Air Group 26, three aboard the carrier, four near the launch site; two P2V's of VP-5 of NAS JACKSONVILLE, at altitude down range and two on standby alert at base.

- Two SA-16 *Albatrosses* of USAF ARS, carrying jumpers and pararafts on stations half way down range and about 50 miles beyond splash point; two telemetry C-54's of the Missile Test Center on station down range.

- A launch site task group, under USAF subordinate command, composed of the shore-based MAG-26 copters, small boats, land convoys, cranes and three Army amphibious LARC's.

This combination gave RAdm. F. V. H. Hilles, TF-140 commander, the complete air, sea and land coverage, from the Cape boondocks along the entire capsule flight course in depth. Adm. Hilles himself communicated with his entire command from the *Mercury* control center at Canaveral.

First contingents of the task force were on the job long before MR-3 got off the pad; destroyers and the carrier some two days before the launch; the patrol planes, about T minus 30 min-

LT. GEORGE COX SKILLFULLY GUIDES HIS 'SHEPHERD'S CROOK'

CHAMPLAIN, ONE OF RECOVERY SHIPS, WAS SHEPARD'S FIRST STOP

utes. *Redstone* blastoff was a signal for the choppers to launch from the *Champlain's* deck.

The "Freedom 7" spacecraft was launched at 0934 EST and splashed into the Atlantic, 302 miles away, at 0949. It impacted three-and-a-half miles from the carrier. TF-140 had its first flight report, an eyeball sighting at 0944, or ten minutes after lift-off, and main chute deployment came shortly thereafter. As thousands of eyes and ears followed the descent, Lt. Wayne Koons' helo zeroed in and seconds after the capsule's landing, was working the pick-up gear. At 0954, Shepard was out of the capsule and in the copter. One minute later the capsule was free of the water. It was deposited on the carrier's deck at 0959, and Shepard set his silvered space shoes on the planking at 1000.

To recap, the astronaut's ride took 26 minutes from the Cape to the CVS deck. For the recovery action, it was 11 minutes from capsule landing to delivery on deck.

Back at Canaveral a short time after the historic flight, Dr. Hugh L. Dryden, Deputy Administrator of NASA, said, "You have all had a part in this, you have gone through the countdown with us, and I am sure that the hearts of all of us beat faster than that of the astronaut, if I can judge from looking at the records."

NASA's Wernher von Braun, who produced the *Redstone*, mused that "the Navy on the receiving end had the happy task of picking one of its own out of the water."

Adm. Hilles complimented his hard-working team, adding that the task would not have been accomplished "if it were not for the resources of everyone . . . participating in this catch."

Next time, recovery deployment may be expanded or altered. TF-140 has laid plans for a variety of flight profiles and conditions, ranging from the ballistic hops as short as a few miles (for example, *Little Joe* flights from NASA's Wallops Island, Va., launch station) to the multi-orbit endurance runs to come in the months ahead. MR-3 was the Task Force's 14th recovery in NASA's *Little Joe*, *Big Joe*, *Atlas* and *Redstone* series. The list includes three primates. Incidentally, while MR-3 was being prepared on the pad, TF-140 in the preceding ten days was on the job for two other *Mercury* launches: a *Little Joe* at Wallops, and an attempted *Atlas* orbiter at Canaveral which was destroyed shortly after launch.

Since organization began more than two years ago, hundreds of recovery powwows were held with NASA's Space Task Group and all others involved. These led to tests, experiments, rehearsals and more of the same. One of the many problems that developed, capsule instability in the water, was overcome by the addition of an extension skirt between capsule bottom and heat shield.

Under Space Task Group guidance, a special "shepherd's crook" was devised for quick action in fastening the copter winch line to a nylon loop atop the capsule. The shepherd's crook is on the end of a 16-foot aluminum pole.

The spacecraft itself carries these recovery aids: the astronaut's HF and UHF transmitters, radar chaff, a SOFAR bomb, a UHF SARAH beacon, sea marker dye, a 16-foot whip antenna, and a high intensity flashing light. All are automatic with manual over-ride.

Task Force 140 has available a quantity and variety of forces for use in its recovery job. Basic to their use, of course, is planning and training. As in some past actual recoveries, salvage ships and diving equipment are on duty at strategic places. Navy VW squadrons may be pressed into service.

As it happened, Lt. Koons who retrieved Shepard was the pilot who picked up MR-1 (first *Mercury-Redstone* shot). He made three *Little Joe* recoveries off Wallops. Koons' copilot, Lt. George Cox, was in the No. 2 seat when the chimp, "Ham," made his *Mercury* space hop last January.

Adm. Hilles, incidentally, was transferred from DesFlotFour and TF-140 last June and has been succeeded by RAdm. John L. Chew.

Recovery of a man was brand new in MR-3. Recovery of space hardware was not. Navy has fished a *Discoverer* satellite package from the Pacific and a *Jupiter* nose cone from the Atlantic. In a feasibility study for recovery of boosters, a Navy LSD and UDT swimmers retrieved a 59-foot *Redstone* weighing 15,000 pounds. And a destroyer has snatched a hurricane weather beacon from the eye of a storm in Project *Hugo*.

TF-140 is ready now for the next task and the one after that. It will be planning and training and anticipating events for the ones after that. It will draw on any and all useful aircraft, ships, vehicles and devices, and well prepared officers and men, from anywhere on the U.S. team, to carry out successfully its special mission.

FIRST A3J'S DELIVERED TO VAH-3

FLEET-BOUND A3J'S GET LAST MINUTE CHECK AT COLUMBUS PRIOR DELIVERY FLIGHT

THE A3J ARRIVED "in the Fleet" when the first of four *Vigilantes* for VAH-3, the A3J RAG squadron, touched down at Sanford 16 June. Capt. F. G. Edwards, who has since been relieved as Commander HatWing One by Capt. Joe Tully, led the four-plane flight of factory-fresh *Vigilantes* direct from the North American plant at Columbus, Ohio.

With a smooth running introduction program, squadron check-outs began almost immediately. Cdr. Ralph Mattus, executive officer of VAH-3, soloed within a week of the delivery of the aircraft. He was first to check-out in the A3J under the Sanford program.

Ground training of pilots and maintenance crew training started at Sanford 1 May. Maintenance and flight training devices were installed and operating well before the arrival of the first aircraft.

These devices include a weapons system trainer which realistically simulated aircraft flight and navigational characteristics *Vigilante* pilots and bombardier/navigators will experience on actual missions.

SYNTHETIC A3J TRAINING BEGAN IN MAY

Initial ground training is being conducted by North American Aviation under contract. The Navy will take over as soon as its instructors, who have already begun their training at Sanford, complete the program.

In addition to contract training, North American field representatives and technicians assist the Navy in maintenance and provide parts during the early fleet introduction phase.

Brazilian is Top Student
Made VT-3 'Student of the Week'

Lt. Paulo Ronaldo Daldegan Moreira, Brazilian Naval Officer who is under training in the U.S. Navy Flight Training Program, was awarded the Student of the Week certificate by Cdr. Ray Stacy, commanding officer of VT-3. Moreira's outstanding grades while in training at this squadron earned him the award.

The Brazilian officer is the first foreign student ever to win this coveted award. The good looking, pleasant, South American student produced the highest grades in his radio instruments phase of training ever recorded at VT-3.

Moreira is one of a group of 18 Brazilian students now under training with the U.S. Navy. The students are under the guidance of Capt. M.R. Costa who will be Chief of Naval Aviation upon his return to Brazil. After completion of flight training, these highly motivated students, all experienced naval officers, will return to their home country to fly S2F anti-submarine aircraft off their newly acquired aircraft carrier.

PARIS AIR SHOW

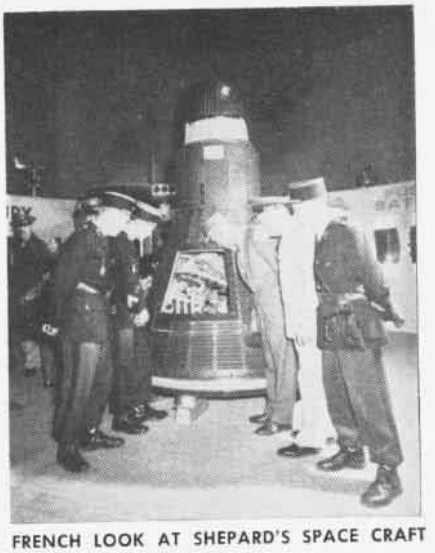
THE 24th International Air Salon was held between 25 May and 4 June at Le Bourget Airport, famous as the landing place for Charles A. Lindbergh and "The Spirit of St. Louis." The U.S. Army, Navy, and Air Force and hundreds of American commercial firms were represented.

U.S. Navy's participation was one of the largest single efforts at the show. On static display were aircraft from the Sixth Fleet carrier, USS *Forrestal*. These included an A4D-2N *Skyhawk*, an F8U *Crusader*, an F4D-1 *Skyray* and a WF-2 *Tracker*.

NATC PATUXENT RIVER had six aircraft on show, three of which are record holders. The A3J *Vigilante*, which established a world's payload altitude record (1000 kilo) of 91,450.8 feet on 13 December 1960, was crewed by LCdr. F. T. Brown, LCdr. John F. Moore, Jr., and Lt. "Larry" Monroe. The Bendix Trophy winner, F4H *Phantom II*, was put through its paces by LCdr. Wm. F. Fraser and Lt. D. D. Davison with MSgt. C. E. Myers as radar observer. Also present was Cdr. Patrick Sullivan and the HSS-2 with which he recaptured the world's helicopter speed record in May 1961. Additional naval aircraft were seen when four F8U's, four A3D's and four A4D's from the *Forrestal* made a fly-by.

The fly-bys were the highlight of Le Bourget. U.S. supersonic aircraft, billed by the French as "the Mach 2 line-up," impressed the spectators.

AIR SHOW WAS INTERNATIONAL: AT LE BOURGET, MORE THAN 12 NATIONS TOOK PART



FRENCH LOOK AT SHEPARD'S SPACE CRAFT

MIRAGE III, FRENCH SUPERSONIC FIGHTER AT SHOW, TAKES OFF

THE ETENDARD IS READY FOR FRANCE'S CARRIER, 'CLEMENCEAU'

U.S. GYRODYNE COPTER WAS A SHOW HIT

NAVY'S A4D-2N ON STATIC DISPLAY WAS POPULAR EXHIBIT THAT DREW BIG CROWDS

TO SAVE A LIFE: TWO TECHNIQUES

KINGS 4:34 *". . . and he went up and lay upon the child and put his mouth upon his mouth . . . and the flesh of the child waxed warm."*

Various methods of resuscitation have been taught for many years, but none of them has been as effective as the mouth-to-mouth method, according to Cdr. Robert E. Mitchell, MC, of Pensacola's Naval School of Aviation Medicine.

Though old as the Bible itself, this

A

A13 OXYGEN MASK: NEW ADAPTABLE USE

is relatively new to modern methods of life saving. And though it often proves increasingly more effective than other methods taught, such as the Shafer, the Biblical system meets expected resistance by some, for esthetic reasons.

Dr. R. G. Bartlett, Jr., also of the Naval School of Aviation Medicine, offers a refinement of the method which should prove satisfactory.

More recently, the mouth-to-mouth technique has been modified to the mouth-to-mask technique. But this method is sometimes frustrating, Dr. Bartlett points out, especially when the available equipment is malfunctioning, not functioning at all, or is too bulky to take into restricted areas.

Most aircraft carriers and air stations have a readily available answer to the problem, he continues: the aviator's A13 oxygen mask.

This mask is small enough to fit into any emergency kit, is extremely reliable, needs no modification, can be used anywhere, and the resultant oxygen-carbon dioxide mixture is appropriate to healthy resuscitation.

B

THE HEART MASSAGE: AN EFFICIENT METHOD

Colleague Dr. Mitchell states, "By placing the mask on the patient's face, holding the jaw up for a free airway, and breathing into the quick-disconnect end of the tube, resuscitation can be carried on indefinitely. The valving of the mask is such that none of the patient's expired air enters the hose; it is thus esthetically acceptable.

"The mask can be used in a whaleboat, helicopter, or any other place where bulkier types of resuscitators are not easily utilized."

Dr. Mitchell feels that everyone in Naval Aviation ought to be aware that this mask has a double lifesaving potentiality—that of its intended use and as a resuscitator.

Instead of surveying old masks, he recommends they be distributed about ships and stations as part of the first aid gear. A rubber airway can be kept with the mask for maximum benefit. He also stresses that this use of the resuscitator should be part of the first aid training of all personnel.

A second method of resuscitation developed by a group at Johns Hopkins Hospital should also be widely disseminated, Dr. Mitchell recommends. This is the technique of closed chest emergency heart massage when the heart has suddenly stopped beating.

The patient is placed in a supine (on his back) position, ascertaining that the airway is open. The administrant kneels beside the patient and places the palms of his hands over the lower end of the sternum, or breastbone.

Pressure is then brought downward, using the weight of the body to compress the sternum one to one-and-a-half inches. Pressure is then released, allowing the chest to expand. This cycle is repeated time and again up to 60 to 80 times a minute.

At the same time the massage is being given, another person should administer the mouth-to-mouth or mouth-to-mask respiration. Though the techniques for heart massage have not yet received general and official acceptance, Dr. Bartlett and Mitchell recommend that the two techniques be in all first aid programs set up throughout the Navy.

For 'Duty Outside his Rate'

Designs a Navigation Aid Monitor

At NAS MEMPHIS, Charles E. Kelly, SOCA, was awarded a Letter of Commendation for his outstanding performance of duty outside his rate. Capt. L. J. Stone, NAS C.O., made the presentation. Chief Kelly, as leading chief of the Ground Electronics Division, procured and installed an automatic alarm system whereby the low frequency navigational aids located at remote areas could be monitored continuously without checking the audio signal of each site.

CAPT. STONE CONGRATULATES CHIEF KELLY

Chief Kelly's initiative and technical ability were also demonstrated when he redesigned a transmitter output circuit to lengthen the critical distance between the transmitter and antenna. This additional length of transmission line was required to enable antenna placement on the very top of the antenna tower. By raising the antenna to a higher location, reliable range was more than doubled on the crash circuit, increasing the station communications capabilities.

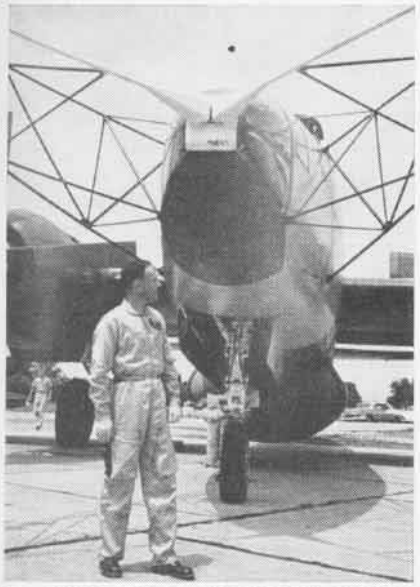
SKYHOOK-AEROTRIEVER DEMONSTRATED

THE FIRST full-scale demonstration of a new Navy system capable of effecting the rapid rescue of personnel from sea or remote land areas by means of a long-range, fixed-wing aircraft was held recently at NAS PATUXENT RIVER.

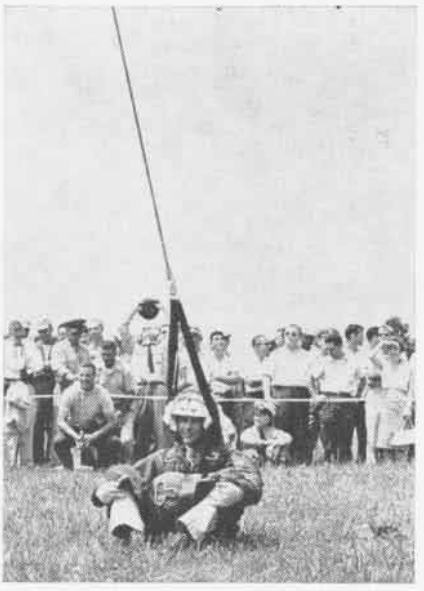
Installed on a P2V *Neptune*, the *Skyhook-Aerotriever* system picked up a man from a life raft at sea and a Navy doctor from the ground. Volunteer participants in the demonstration were Chief Mineman James H. McGee, attached to UDT-21, Little Creek, and Lt. Edmund Perry Jacobs, MC, head of the Aeromedical Branch of the Service Test Division, Pax River.

Previously, a large number of inert loads up to 400 pounds had been retrieved and seven pick-ups of men had been made. Evaluation of the *Skyhook-Aerotriever* is being conducted by the Naval Development Unit (NADU) based at NAS SOUTH WEYMOUTH under technical direction of ONR and in cooperation with BUWEPS. This was the first time two men were retrieved in succession by a fixed-wing aircraft in continuous flight.

In effecting a pick-up, the *Neptune* parachutes a packet to a person on the ground or in water. In the packet is a harness, put on much the same as a pair of overalls. Attached to the harness is a 500-foot lift line of high-strength braided nylon. At the end of a line is a balloon which, in turn, is plugged into a helium bottle. The person to be rescued has only to open a valve and the balloon inflates. Another automatic valve seals the balloon when it becomes fully inflated.



LT. JACOBS VIEWS PICK-UP RIG ON P2V



FROM A SIT-DOWN START, A SAFE ASCENT

Since the balloon has an aerodynamic shape, it tends to hold the lift line vertical, even in a strong wind.

The *Neptune* is equipped with a horizontal yoke extending at angles from one point in the nose. The lift line is engaged between the two prongs of the 25-foot long yoke and is guided into the crotch of the yoke where a mechanism locks it to the plane. The aircraft is flown straight and level upwind to engage the lift line below the balloon. When contact has been made, the balloon tears loose.

Once engaged, the line trails back under the fuselage, and as soon as the line and pick-up have stabilized in flight, a crewman with a J-hook snares the line through a rear deck hatch. A loop of the line is then brought aboard and secured to a powered winch. When the line is reeled in, the person or load is brought into the aircraft through the hatch.

The initial shock experienced by the person picked up is small, about one-third of the pull felt when a parachute is opened.

In a typical pick-up, the aircraft cruises 500 feet above the man and travels at a speed of about 150 miles per hour. Acceleration in speed from zero on the ground to the speed of the aircraft is gradual and the subject experiences no difficulty in breathing.

Initial lift is in the vertical direction and slowly becomes horizontal as the line straightens out to follow the plane. The entire lift can be completed in five minutes.

Pickups can be made under a variety of weather and geographic conditions. They have been effected at sea, in slightly wooded areas, in the Arctic, and the Antarctic. Weather is a factor only to the extent that it might ground aircraft. Successful pick-ups have been made in fair weather, snow storms, and even through a fog bank. The Antarctic tests were conducted by Air Development Squadron Six during Operation *Deep Freeze 61*.

Under development since 1954 by the Robert Fulton Company, Newton, Conn., for the Office of Naval Research, the system is undergoing final tests before acceptance by the Navy.

Photo Navigator is Named

O'Neill is One of Three in Navy

Ltjg. Robert J. O'Neill of Heavy Photographic Squadron 62 recently received a BUPERS letter designating him a Naval Aviation Photo Navigator. He is the third such officer in the Navy to receive this designation, and he is also the first to be assigned a squadron.

CDR. F.H. AUSTIN, JR., *MC (L), Naval Aviator and Flight Surgeon (NANews, May 1959, p. 24), checks Lt. C. Lapp's suit. Austin works with Project Mercury and was medical monitor for Cdr. Alan Shepard's flight.*

BOEING F4B-4 *was mainstay of Navy and Marine fighter squadrons in early Thirties. On display at several 50th Anniversary occasions has been BuNo. 9241, recently rebuilt and repainted by NAMC Philadelphia in the marking of VF-1, right. These colorful markings are typical of Navy carrier squadrons of the period. BuNo. 9241 was originally delivered to Marine squadron VF-10M in San Diego in December of 1932, left. It later served in the Training Command and was transferred to the predecessor of the FAA in 1938. Donated by its final owner, Mr. Ray Hyland of Rochester, N. Y., it is a part of the National Air Museum's collection.*

Supply Circuit Completed

Atlanta in Transceiver Network

Naval Aviation scored a minor victory over an old enemy, paper work, when a new transceiver circuit between the supply departments of NAS ATLANTA and NAS JACKSONVILLE was opened recently. The circuit will transmit either voice or punch card type information.

With this installation Atlanta's supply records will be kept up to the minute on automatic data processing equipment at Jacksonville.

Here is how the system works. Say Atlanta issues one magneto for an AD. Atlanta Supply Department will make up a punch card, and the information will be transmitted over the new transceiver line to the automatic data processing machines at Jacksonville. The machines will adjust Atlanta's stock records to show one less AD mag on hand. If this issue puts Atlanta's stock down to the level where more AD mags should be ordered, the machines will print out a reminder to the clerk that it is time to order more.

If Atlanta does not have the AD magneto on hand, the equipment will automatically place an order at once for it with the Supply Department at Jacksonville.

The system also works in reverse, that is, it will make it easy for the rest of Naval Aviation to make use of any critical parts Atlanta might have on hand. Before this system was installed, it was hard to tell just what parts were on hand in Atlanta Supply Department without checking the local records to see what was available. Now if a critical part is needed at Jacksonville, a search will be made of machine records on Atlanta's supply records to see if they have it. A report can be obtained speedily.

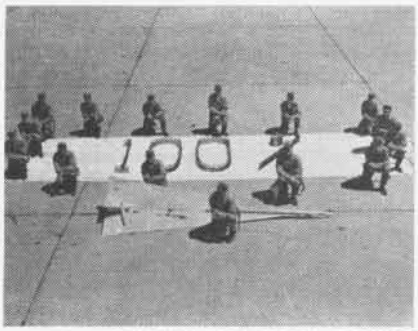
The Atlanta transceiver circuit is the last of four such circuits between Jax and other southeast air stations. The network also includes NAS SANFORD, Mayport Naval Station, and NAS GLYNCO.

The new network is tied in with a larger one connecting the Aviation Supply Office in Philadelphia with all major naval air supply activities in continental United States.

All VF-11 Pilots Qualify

Squadron Cops Total of 42 'E's

The *Red Rippers* of VF-11, now deployed in the Mediterranean with CVG-1 aboard USS *Franklin D. Roosevelt*, claim a new record for pilot qualifications by an F8U squadron during FY 1961. The squadron qualified all its 15 pilots in all fighter tasks.



BANNER PROCLAIMS 'RED RIPPER' PROWESS

All pilots qualified in these events: 20,000-foot gunnery, 30,000-foot gunnery, dart gunnery (using small dart), 45,000-foot camera gunnery, *Sidewinder* intercepts and broadcast control intercepts. In the process of qualifying, the squadron won 42 'E's.

'Champ' Establishes Trophy

Departments Win on Point System

To honor one of her former crewmen, USS *Lake Champlain* recently announced the establishment of the John Thomas Memorial Competition, designed as a merit award for the outstanding department aboard.

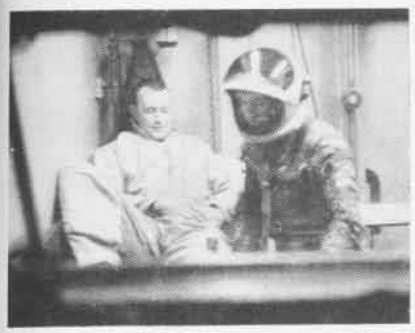
The trophy competition is a memorial to Chief Warrant Boatswain John Thomas who, as chief boatswain of the *Lake Champlain*, lost his life in a dockside fire in Boston Naval Shipyard 25 September 1960.

All departments are eligible in the competition for the trophy. A point system has been assigned for achievement in various phases of departmental life, including results of personnel inspection, athletic tournament honors, and advances in the education and training programs. An over-all high tally for any two-month period will determine the winner, and certain benefits will be conferred.

Personnel in the winning department will sport "trophy winner" tags and enjoy special shipboard privileges. Some of these rewards include extra liberty, special pay line places, head-of-the-line spots at liberty call, and a reserved section on deck when the carrier's intercom pipes "movie call."

Two Exit Pressure Chamber
Made 5-Day High Altitude Tests

Two volunteer Navy enlisted men emerged from a low-pressure chamber at Point Mugu's Naval Missile Center after five days of simulated high altitude (34,000 feet) flight during



SCRONCE, PRUCINO ARE READY TO EMERGE

which they existed on 100 per cent oxygen. The test was part of a continuing series to determine man's reactions and capabilities under the stresses encountered in flight at high altitudes.

The volunteers, both 24 years of age, were Joseph F. Prucino, HM2, and Billy Lee Scronce, TD2. They wore different equipment. Prucino was in the Navy's Mark IV full pressure suit; Scronce, in pilot's normal flight equipment.

According to Navy medical personnel in attendance at the test chamber, both men are in excellent health and spirits and suffered no ill effects from the experiment. During the test, Prucino ate a special high-protein liquid food substitute while Scronce ate regular Navy food.

The internal pressure in the oxygen-filled chamber was 3.5 pounds per square inch, as compared with 14.7 pounds per square inch of atmosphere at sea level.

A 20-man bio-science team headed by Dr. A. L. Hall, MSC, was in constant attendance monitoring heart sounds, respiratory action and body temperatures. Communications were maintained by inter-com and closed circuit TV systems. Electrocardiograms (photographic records of heart action) were taken four times a day and vital capacity (how much the lungs can hold) was measured twice a day. One-way glass permitted direct visual observation of the men.

Prucino and Scronce maintained a five-hours-on, five-hours-off schedule during the test, performing various physical and psychological tasks.

AIRCRAFT OPERATED *by MATS for President Kennedy and other top officials now bear "United States of America" markings. These include Boeing VC-137A's as shown and other four-engine transports, such as Constellations. VC-137's are operated from Andrews Air Force Base to which U.S. Navy aircraft operations in the Washington, D. C., area are scheduled to be shifted.*

Boston Subway Generator
Enters Space Age via Wind Tunnel

The crowd noise of a busy Boston subway is now drowned by the roar of a research wind tunnel for one giant generator which, at 40 years of age, refuses to retire.

It went to Palo Alto research laboratories of Lockheed Missiles and Space Division when the scientists found a need for a machine producing direct

SUBWAY GENERATOR SERVES SPACE AGE

current in tremendous amperage for relatively long periods.

A new generator, they discovered, would cost nearly three-quarters of a million dollars. The Boston subway system, in the meantime, changed its operation and their 52-ton generator was no longer needed. It was obtained for one-tenth of the cost of a new one.

Now anchored in six feet of concrete beneath the Palo Alto research laboratories, it furnishes tremendous heat to the one-foot diameter power chamber of a special high speed wind tunnel in which metals and other materials for use in space are tested.

THIS SUPER GAS STATION *at Cherry Point is one of several recently completed to expedite refueling operations. Each pump has four hoses and a pumping capability of over 400 gallons a minute. The jet refueling system can handle 32 aircraft simultaneously and launch them in 25 minutes. With the new installation, Cherry Point expects to slice in half the number of man-hours necessary to refuel and to minimize the need for refueler trucks on the Air Station.*

LETTERS

SIRS:

While I found the article entitled, "Family Tree of Neptunes" (June 1961 issue of NANews, pp. 12-13), of considerable interest and accuracy, I noted also that perhaps one of the most significant historical events concerning this famous naval aircraft was missing. I refer specifically to the date of 28 April 1948 when two P2V-2 aircraft, BuNos. 39318 and 39368, made the first take-offs from the flight deck of USS *Coral Sea*. Each aircraft utilized JATO.

Pilots flying the aircraft were Cdr. Tom Davies of *Truculent Turtle* fame and Lt. Joe Ussery in BuNo. 39318, and LCdrs. John Wheatley and "Pete" Torry in BuNo. 39368. Davies was at that time on duty in CNO. The other pilots were all attached to the Flight Test Division of Naval Air Test Center, Patuxent River, Md.

This event was of particular importance, for it marked the first carrier take-offs for an aircraft of this size since General Doolittle's epic raid on Tokyo. It also signified that an atomic bomb could be delivered from the deck of an aircraft carrier. At this early date, it is to be remembered that atomic weaponry was bulky and of considerable weight. The P2V *Neptune* was capable of supporting such a load. It was, I believe, the only aircraft in the Navy which could do so efficiently.

Let's chalk up another first for the *Neptunes!*

JOHN A. H. TORRY, JR., CDR.

Naval Air Mine Defense Development Unit
Panama City, Fla.

Observatory is to be Built
To House Unique Telescope Design

Construction of an observatory at the Naval Observatory's Flagstaff, Ariz., station has been authorized.

The eight-story building will house a new telescope so accurate that it will be possible to measure the position of a star with a precision equal to the diameter of a golf ball at a distance of 85 miles.

The rotating top part of the structure, shaped like a half-sphere with a diameter of 65 feet, will weigh 150 tons. It will be constructed of welded steel plates and will have doubly insulated walls to shield the telescope against temperature changes.

A dome, powered by a two-horsepower motor, will revolve on 40 wheels.

One project planned for the telescope is to determine the distances of faint stars in the neighborhood of the sun; i.e., within a 100-light-year radius or 600 million miles from earth.

'AM I GLAD *to see you!' remarks LCdr. K.E. Ohls of VAH-2 in welcoming aboard Coral Sea two fully trained A3D crews who are reporting from VAH-123, the West Coast replacement training squadron for heavy attack. From left: Cdr. L.E. Kirkemo, C.O., HATRon 2, Cdr. J.S. Swipe, CAG-15, LCdr. Ohls, Ltjg. W. Mechling, H. McNulty, AE1, W. Mitchell, AT1, R. Hamesfahr, AT1, Ltjg. C. Swarington, LCdr. D. Webster, Lt. P. McKinnon, LCdr. R. Bernhardt.*

CALLING BARRICADE RIGGERS

The barricade rigging crew of the aircraft carrier *Yorktown* recently set what they believe is a new record for rigging a barrier. The time, one minute and 16 seconds, is four seconds faster than that set last year by the USS *Lake Champlain* (CVS-39).

The record time, marked during one of the four barricade rigging exercises required by ComNavAirPac each year, was set by personnel from the V-1 and V-2 Divisions aboard *Yorktown*.

Are there any challengers?

ROY CRANE *(left), creator of "Buz Sawyer," laughs at a cartoon of "Tiger," one of Crane's current characters, drawn by Ltjg. Dave Lang of VP-40. Mr. Crane visited Sangley Point in his current visit to Seventh Fleet units.*

Space Age Is Reflected
Another Stanza for Navy Hymn

A new stanza honoring the Navy's role in the space age is a proposed addition to the "Navy Hymn." Contributed by Cdr. Joseph E. Volonte, Range Planning Officer at Headquarters Pacific Missile Range, Pt. Mugu, it was first sung at the station's "Chapel of Faith for the Space Age."

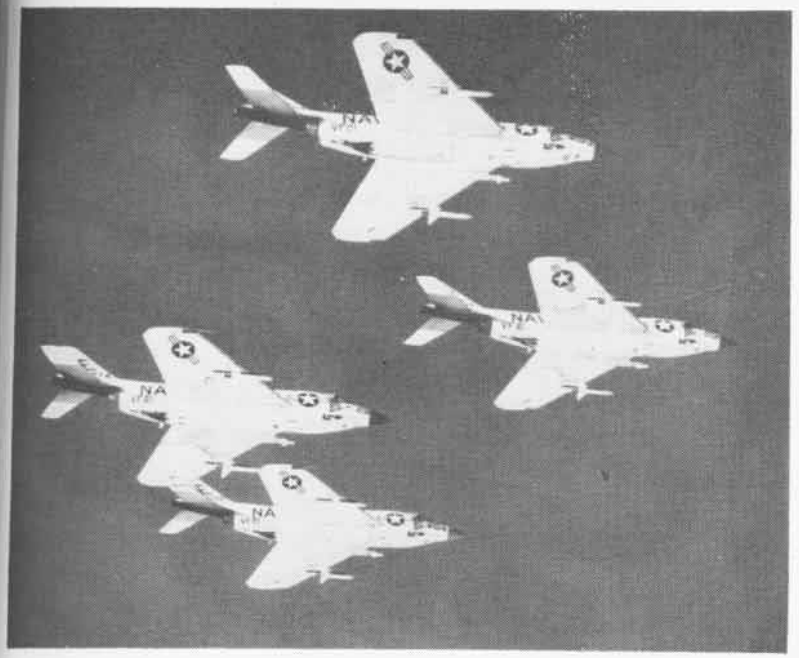
Cdr. Volonte's composition reads: "Eternal Father, King of Birth / Who did create the heav'n and earth / Who bids the planets and the sun / Their own appointed orbits run / O hear us when we seek Thy Grace / For those who soar through outer space."

Picture Credits

Naval Aviation News is indebted to Mr. Warren M. Bodie for the XP4Y-1 picture and to Mr. Gordon S. Williams for the PB2B-2 and PB-1W pictures, which appear in "Patrol Planes—World War II On," pp. 22-25.

Mr. Williams also furnished the picture of the F4D-1 with refueling probe, appearing on p. 2.

Mr. Warren Shipp sent in the current view of the F4B-4, shown on p. 38.

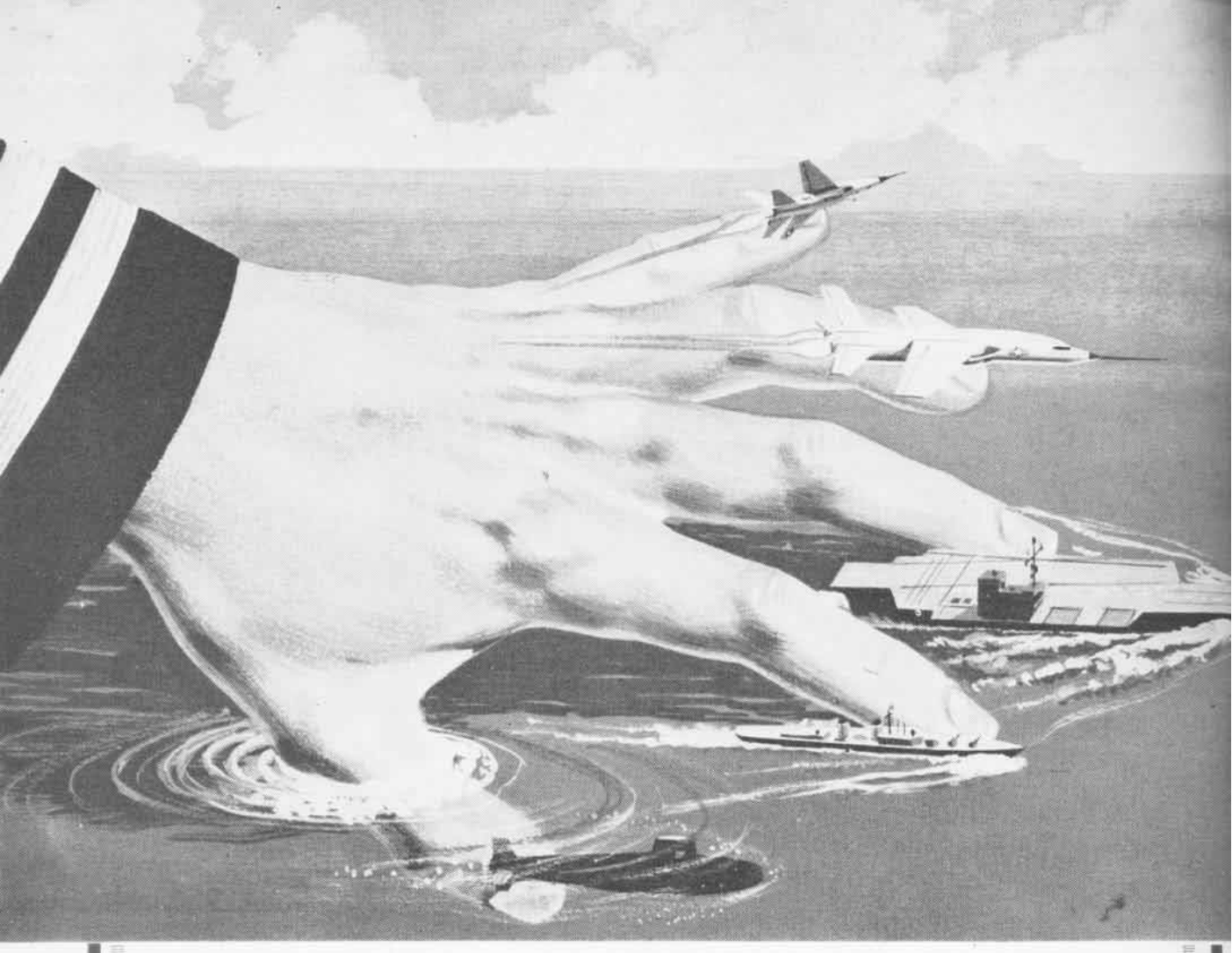


SQUADRON INSIGNIA

No greater challenge to man's capabilities exists than carrier aviation. Fighter Squadron 21's "Freelancers" are as dynamic and devoted a team of Navy men as can be welded together to meet this challenge. Led by Cdr. D. D. Engen, front row center below, Fighting 21 is currently winding up a Seventh Fleet deployment aboard USS Midway, combat ready to carry out its every assignment.

BLACK PANTHER SYMBOLIZES NIGHT ROLE

'FREELANCERS' ASSEMBLE FOR PRE-DEPLOYMENT BRIEFING IN MIDWAY'S READY ROOM TWO



FIST OF A NEW FRONTIER

The mobile ships and planes of the Fleet, military fingers of our Nation's military fist, can reach effectively into any part of the world. As it has been for seagoing nations through the ages, SEAPOWER continues to be a mighty instrument of national policy. The attack carrier, a fast-moving, floating, steel air base, is the heart of the Fleet. The Navy's 25-minute, 35-millimeter, color slide presentation, entitled, 'New Frontiers for SEAPOWER,' describes the tasks and responsibilities of our modern Navy and underscores its determination to preserve freedom. This presentation and other SEAPOWER films are available at the nearest U.S. Naval Air Station, Naval Reserve Training Center or Naval District Headquarters.

NAVAL AVIATION NEWS